IBM Software Group

SOA and WebSphere

Greg Manship
Americas Sales Executive,
WebSphere Business Integration
manshipg@us.ibm.com

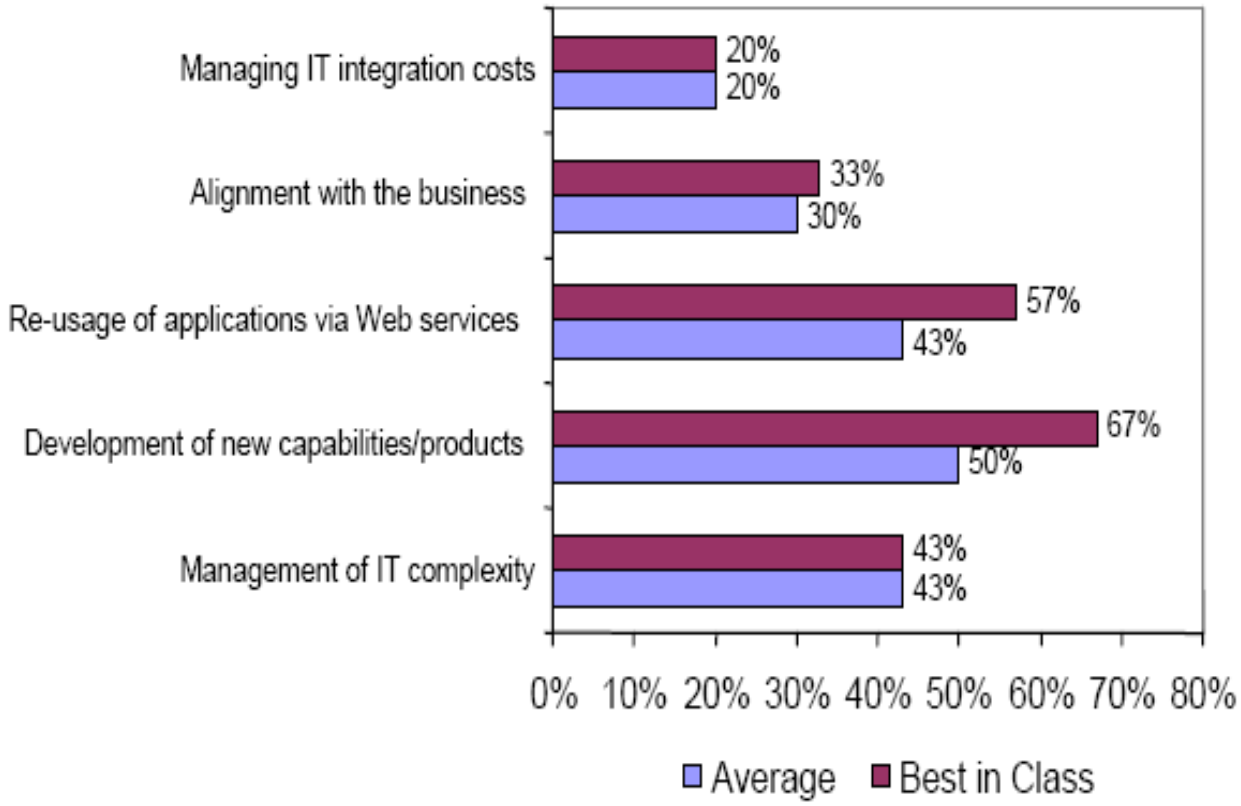
SOA: The Key to Business Flexibility

ON DEMAND BUSINESS

Agenda

- Introduction to Services Oriented Architecture (SOA)
- The WebSphere Suite
  - Model with WebSphere Business Modeler
  - Assemble with WebSphere Integration Developer
  - Deploy with WebSphere Process Server
  - Manage with WebSphere Business Monitor
- Enterprise Service Bus
  - Data Transformation
- Summary

Top 3 Factors Driving SOA Implementations



Source: AberdeenGroup, December 2005

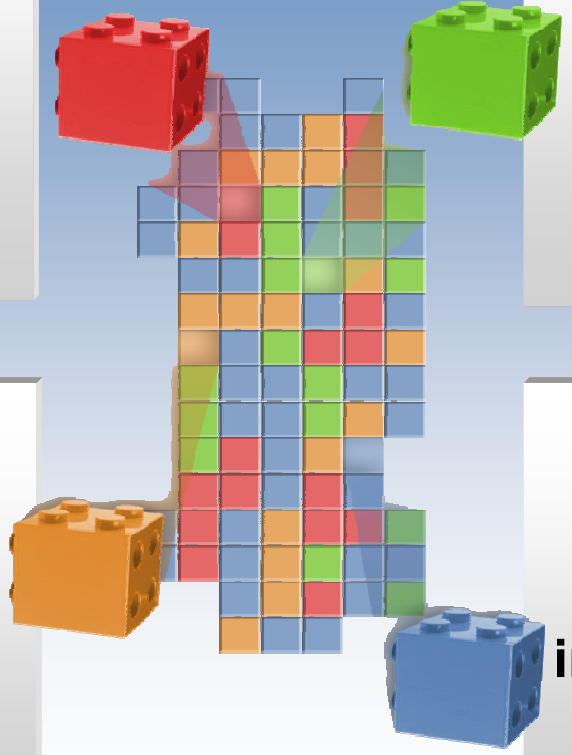
What is …..?

… a service?

A **repeatable business task** – e.g., check customer credit; open new account

… service orientation?

A way of integrating your **business as linked services** and the outcomes that they bring



… service oriented architecture (SOA)?

An IT **architectural style** that supports service orientation

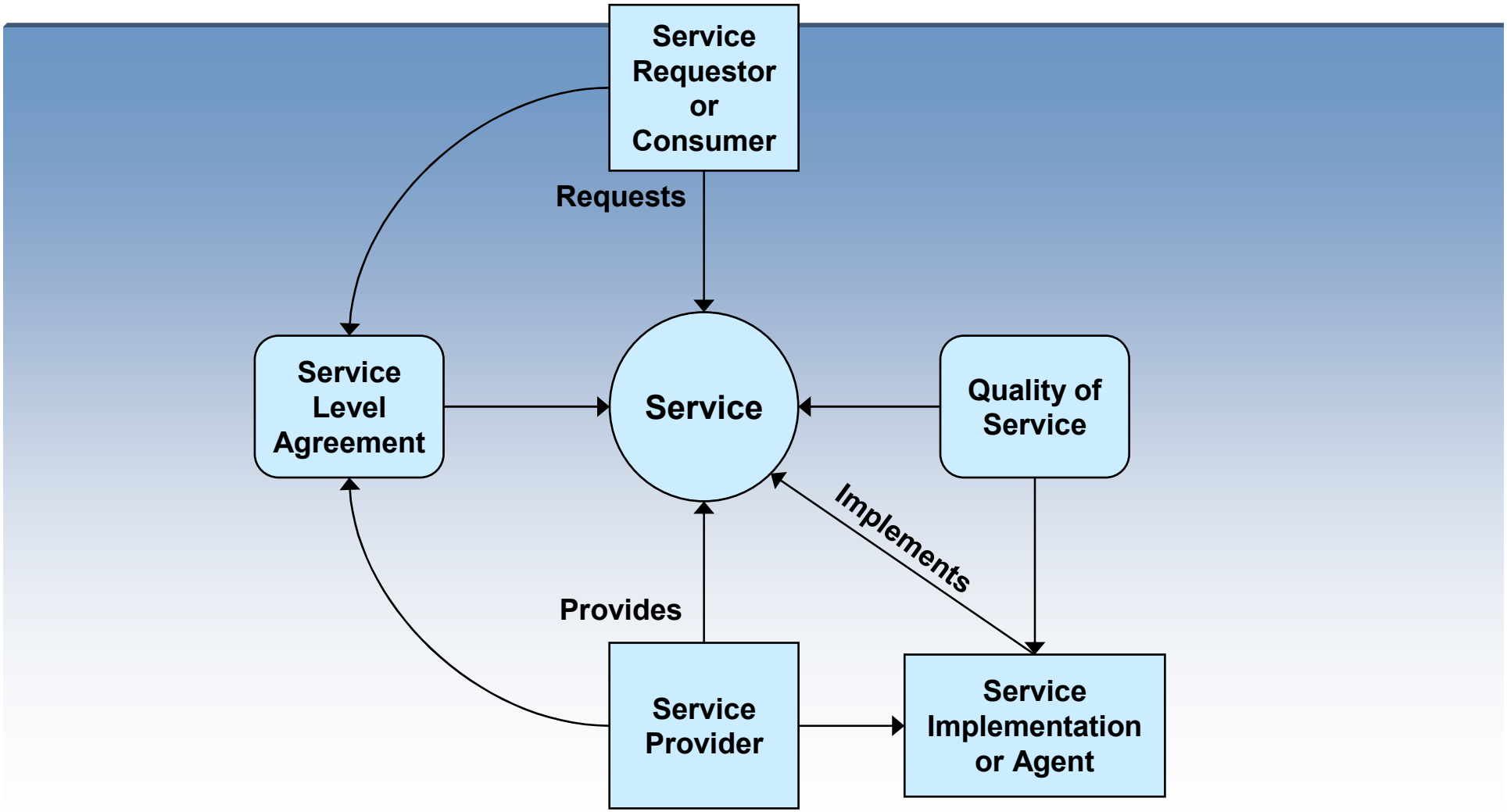
… a composite application?

A set of **related & integrated** services that support a business process built on an SOA

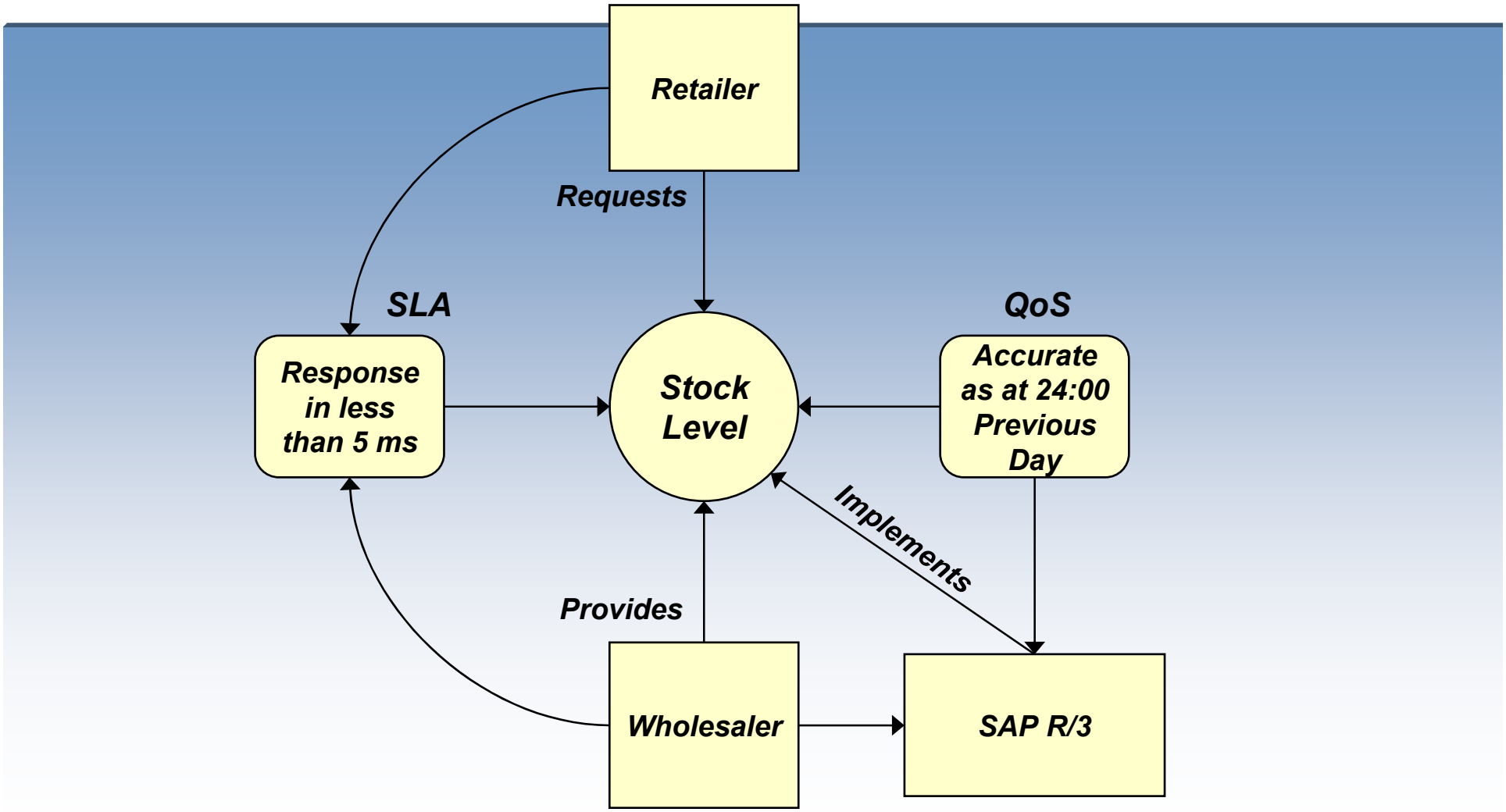
SOA Lets You Share and Reuse in Three Ways

- Maximize skills and increase ROI
- Reuse is more than just reusing code
- Benefits for new and existing projects
- Extend today's solutions beyond existing channels

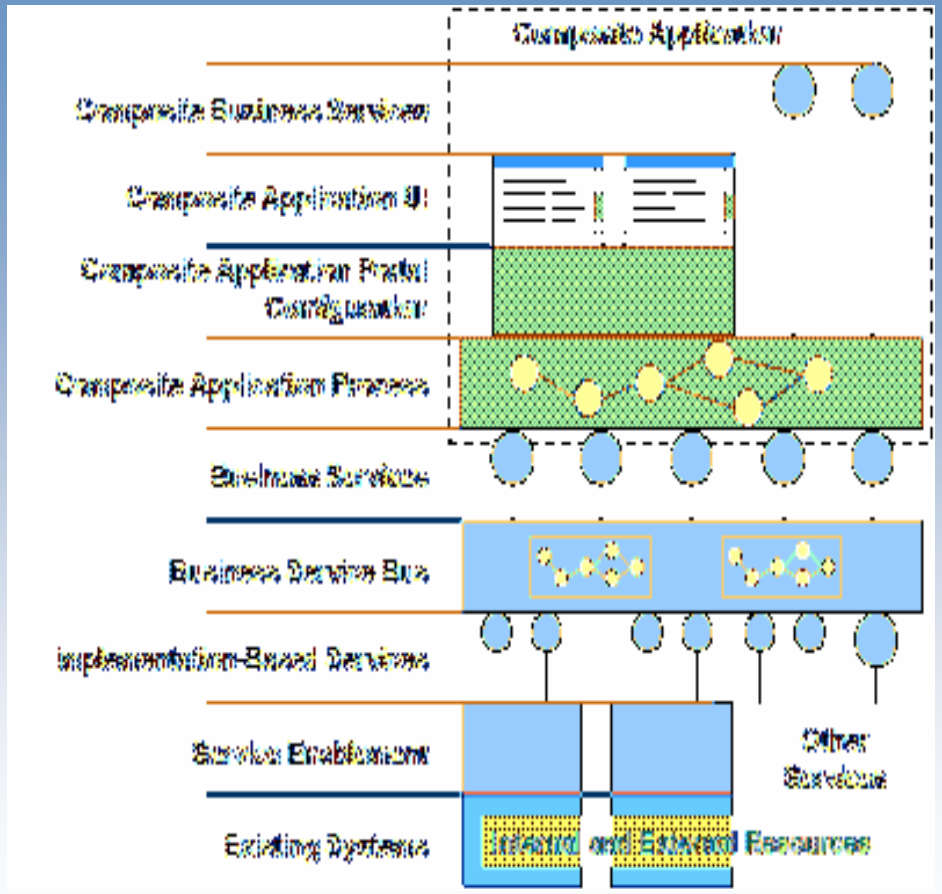
A Practical Description of a Service



A Practical Description of a Service - Example

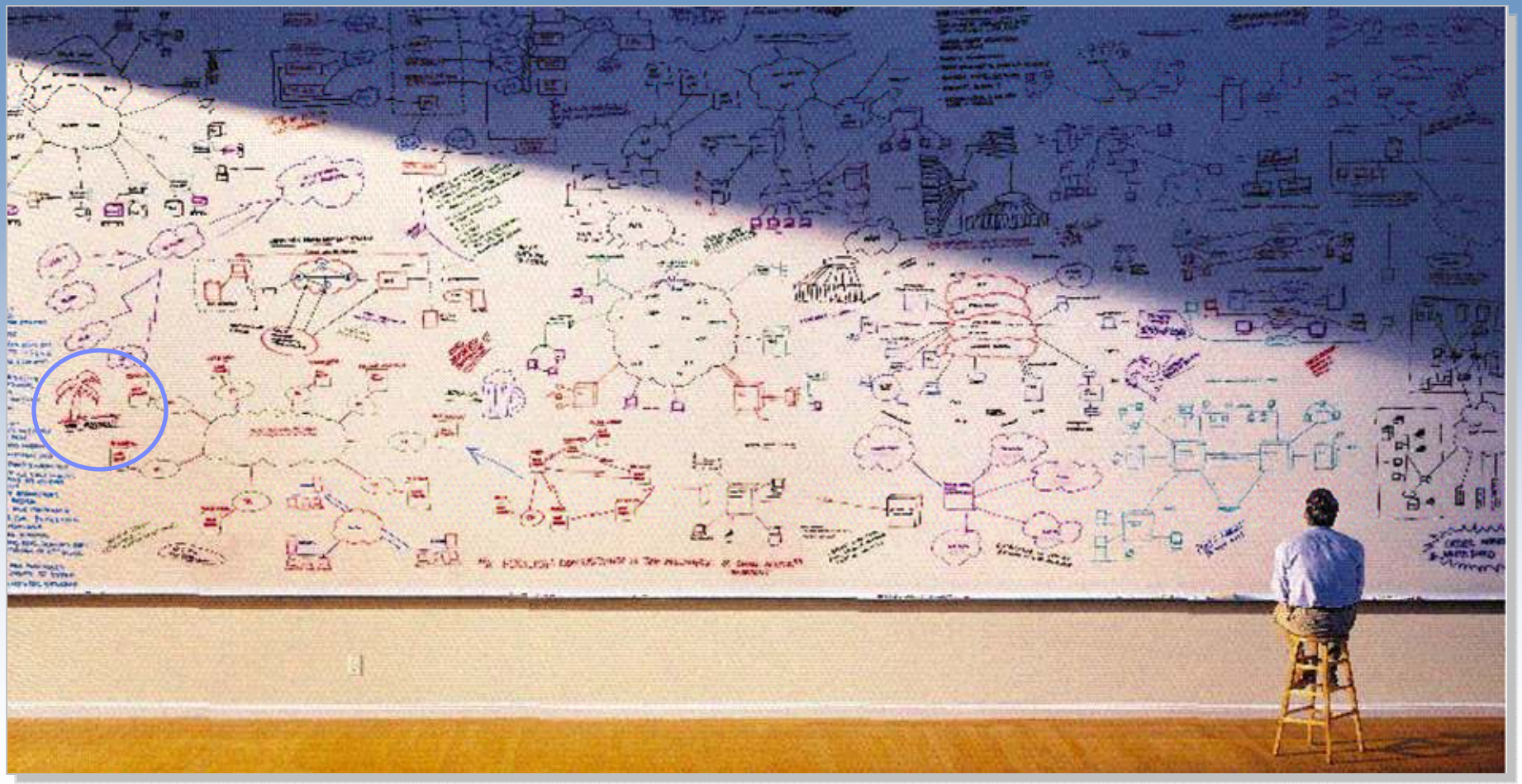


SOA ~ A Layered View



- Lawrence Wilkes, CBDI Forum Ltd. 2004

Most Agencies have a long way to go…



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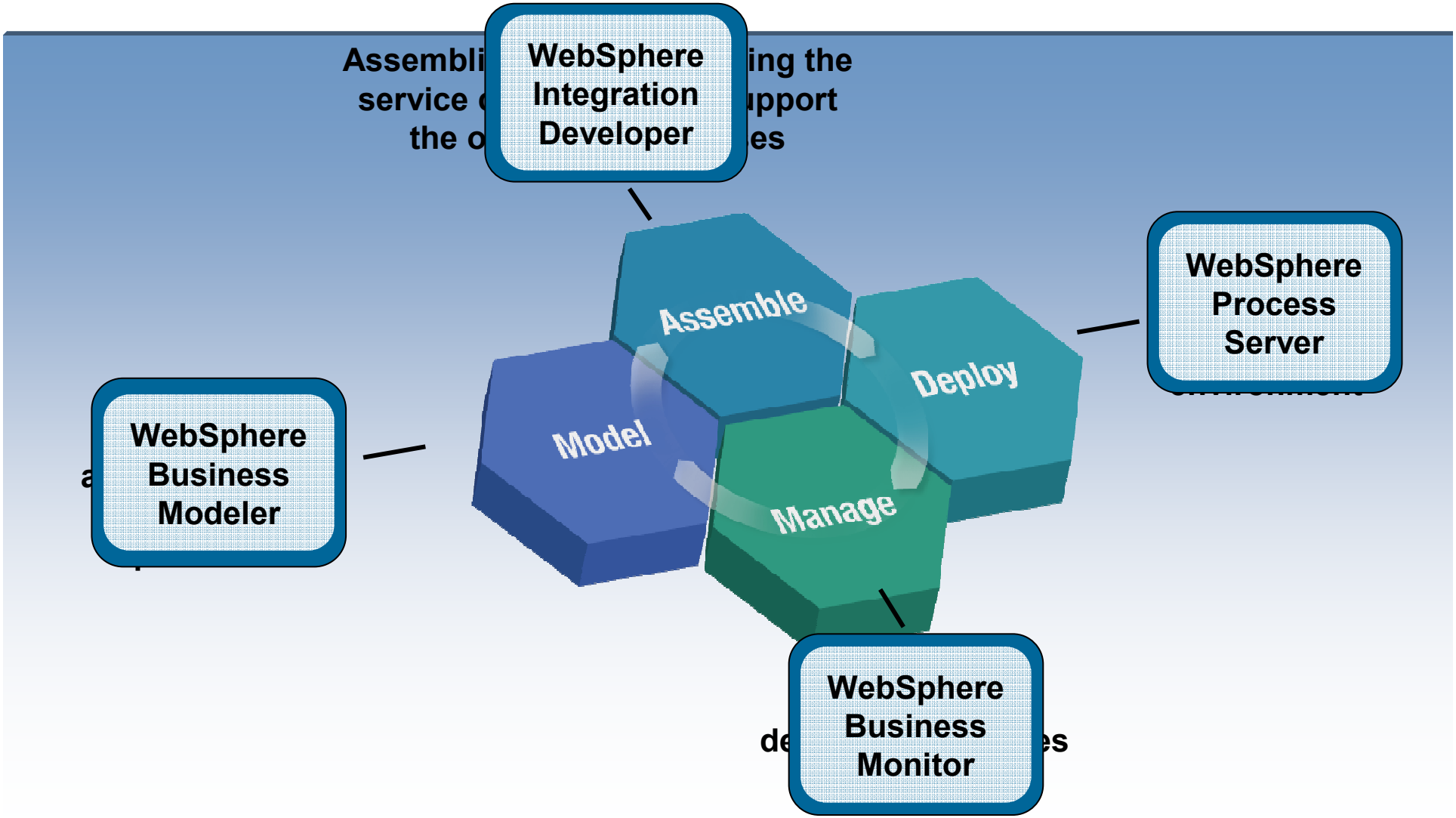
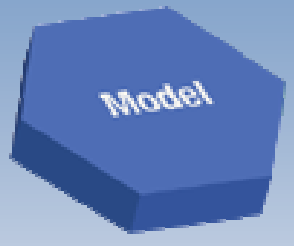
SOA Lifecycle



Model with WebSphere Business Modeler

- Achieve regulatory compliance with less time and expense through well documented, auditable processes
- Simulate process changes, and assess impacts on costs, resource utilization, and cycle times prior to deployment
- Reduce risk by simulating market changes against current process models
- Improve the company's scorecard by defining Key Performance Indicators
- More effectively deploy valuable skills to the areas where they're best utilized

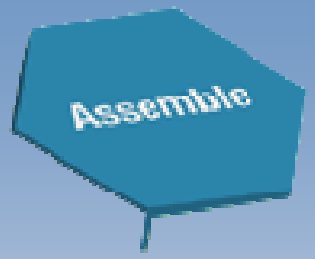


***Financial customer**:*
53% faster post closing mortgage processing time
34% increase in efficiency, estimated annual savings $4M

WebSphere Business Modeler

Assemble with WebSphere Integration Developer

- Simplified hand-offs between business and IT that let developers get started quickly
- Easy to use tools that minimize skill requirements
- Streamlined development with the reuse of existing resources
- Dynamic process assembly



"Our development cost data proves that on each successive project the cost per interface dropped. It was because of the reuse"

- Lead Architect
Dow Chemical

WebSphere Integration Developer

Deploy with WebSphere Process Server

- A Single Process Server
  - ✓ Reliable, scalable, secure, open standards
  - ✓ Single integrated runtime for all SOA based process automation
- Support all aspects of process integration
  - ✓ process flows
  - ✓ business rules
  - ✓ human steps
  - ✓ services
  - ✓ state machines
- Rapidly change process behavior to keep pace with business requirements
  - ✓ Reuse existing services that you already have and create new services for future use.
  - ✓ build process flows without knowing where the information is coming from (late binding of services)
  - ✓ business rules control the execution sequence of the process and can change dynamically

"Once the up-front analysis and definition work are completed, the Business Integration infrastructure allows us to implement new business processes at a rate of one every few weeks for medium to complex processes."

– EAI Project Manager, Electrabel nv/SA

WebSphere Process Server

Manage with WebSphere Business Monitor

- View performance and modify dashboards in real time
  - Scorecard view of Key Performance Indicators
  - Track cost, time and resources
  - Identify bottlenecks, balance workloads, reduce latencies
- Intervene in deployed processes
  - Set situational triggers and notifications
  - Dynamically respond to these alerts
- Continuous process improvement
  - Monitor in-flight business processes
  - Make process modifications based upon real-time data sent back to the Modeler for simulations

Retail customer:
99% reduction in shipping errors
47% reduction in shrinkage for Inventory Management

WebSphere Business Monitor

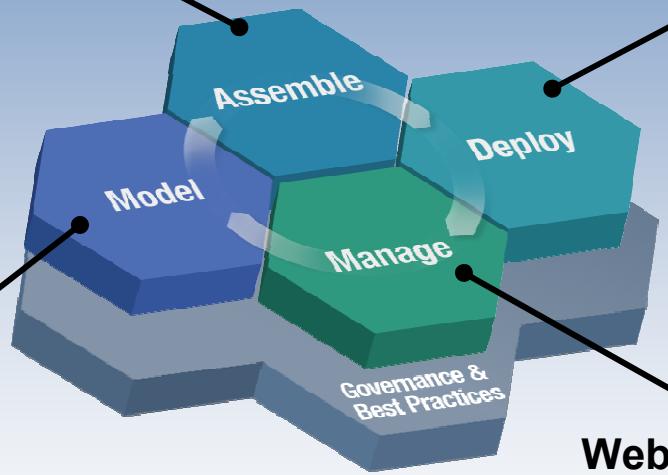
Supporting continuous improvement and innovation
The WebSphere BPM Suite

WebSphere Integration Developer

Easy-to-use graphical tools to simplify and speed the assembly of composite applications

WebSphere Process Server

Flexible deployment of business processes, making plug-and-play of components a reality



WebSphere Business Modeler

Simple to use process modeling for the business analyst to help maximize process and business resource re-use

WebSphere Business Monitor

Real-time visibility into process performance enabling process intervention and continuous improvement

Supporting continuous improvement and innovation
The WebSphere BPM Suite

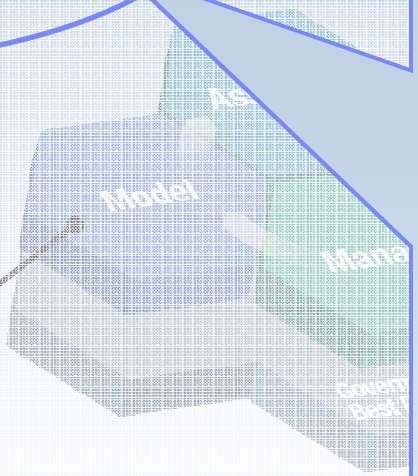
WebSphere Integration Developer

Easy-to-use graphical tools to simplify and speed the assembly of composite applications

Graphical tools are designed to simplify and speed implementation. They include:

- Human Task Manager
- Business Rules Editor
- State Machine
- Component Assembly Editor
- Selectors
- Relationship Management
- Mapping tools

Java programming skills are not required!



WebSphere Business Modeler

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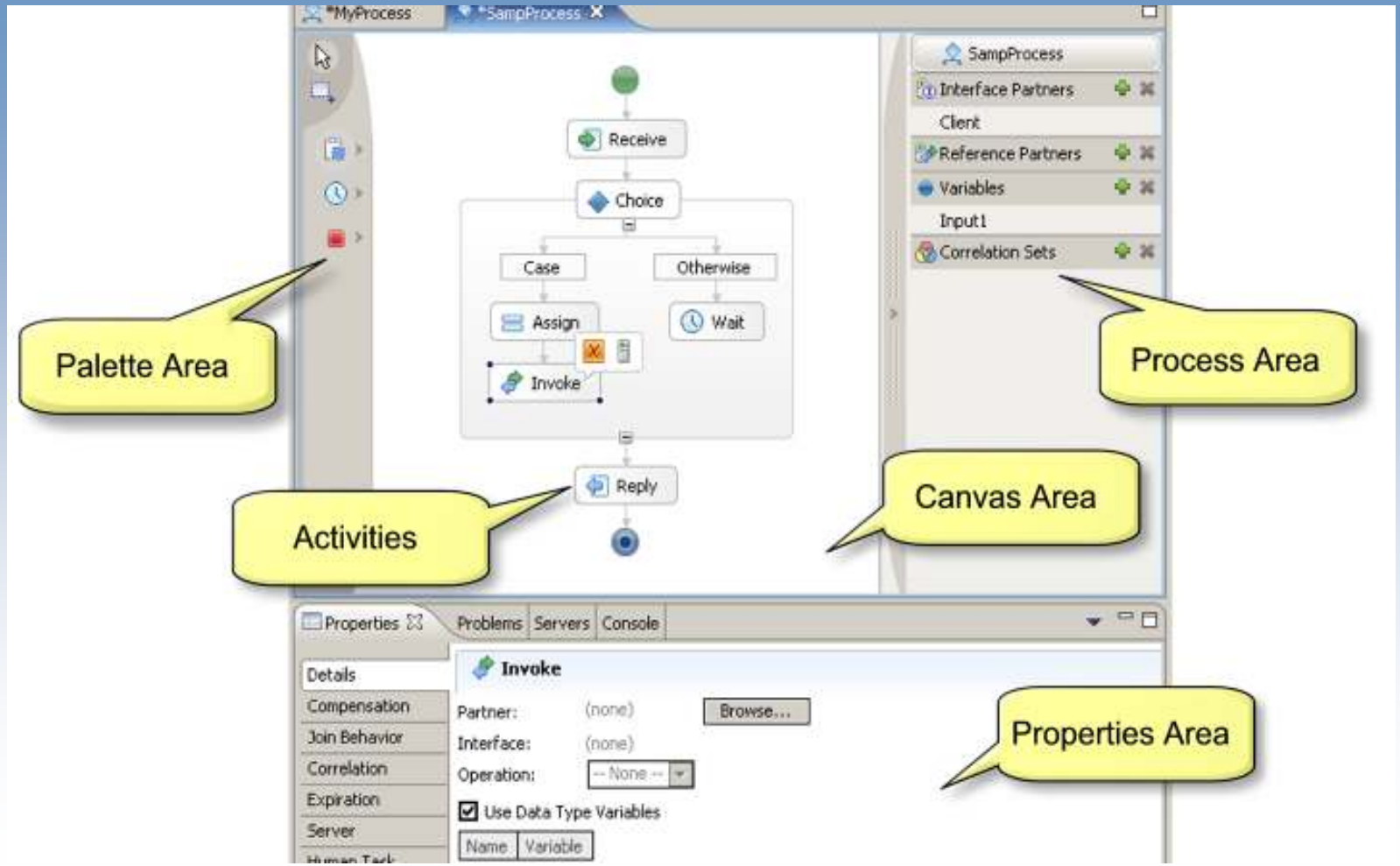
WebSphere Process Server

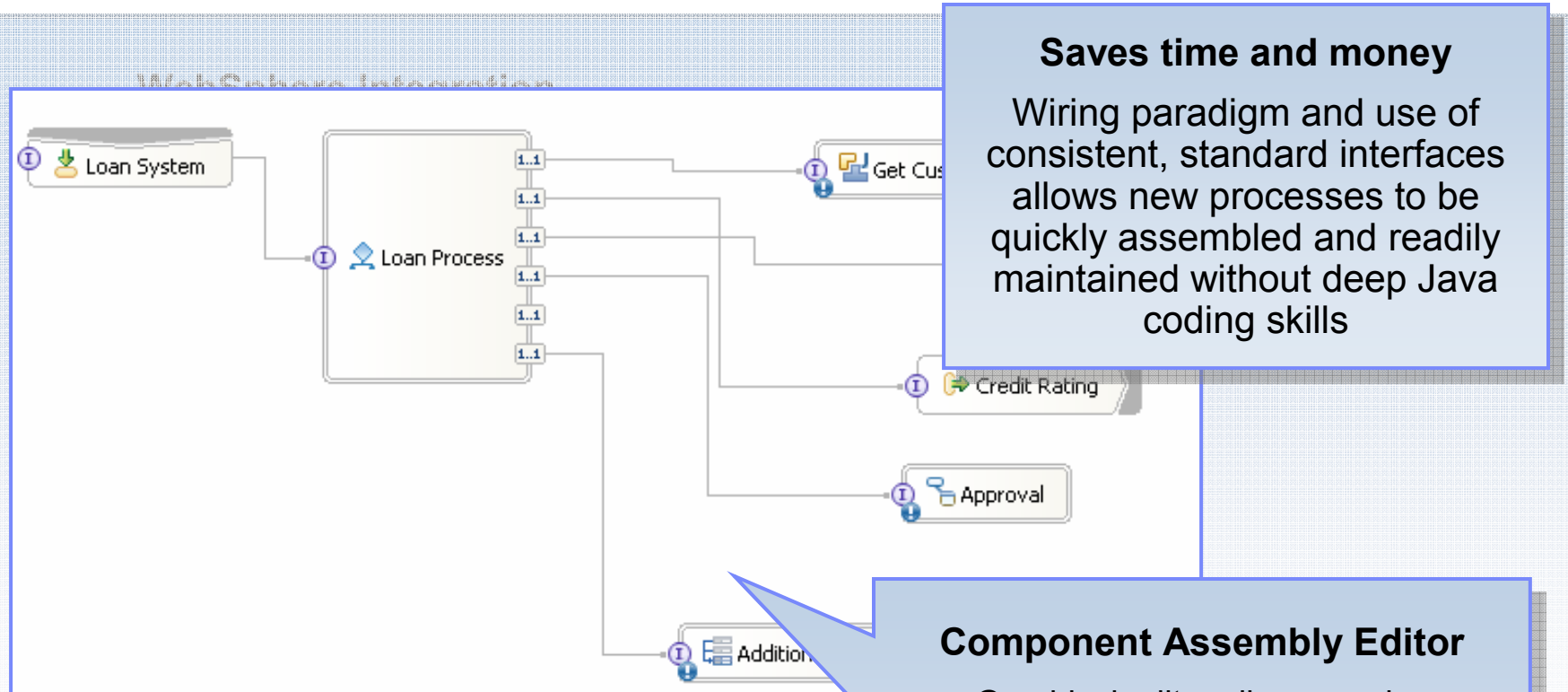
Flexible deployment of business processes, making

intervention and continuous improvement

The WID Process Editor …



Supporting continuous improvement and innovation
The WebSphere BPM Suite



Saves time and money

Wiring paradigm and use of consistent, standard interfaces allows new processes to be quickly assembled and readily maintained without deep Java coding skills

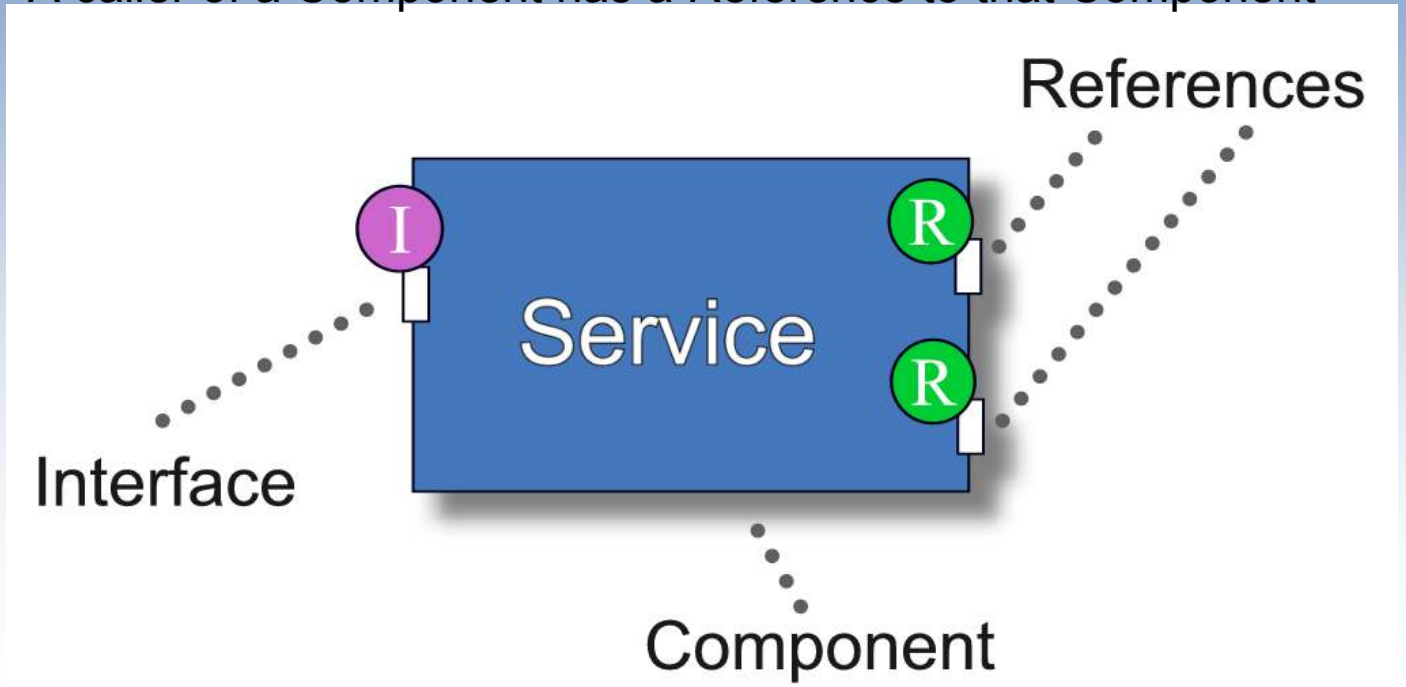
Component Assembly Editor

Graphical editor allows service components to be "wired" together, tested, and then implemented. IBM's Business Service Registry enables service components to be managed.

Additional value-add capability includes Common Event Infrastructure, Common Business Objects, Dynamic Service Selection

Service Component Architecture …

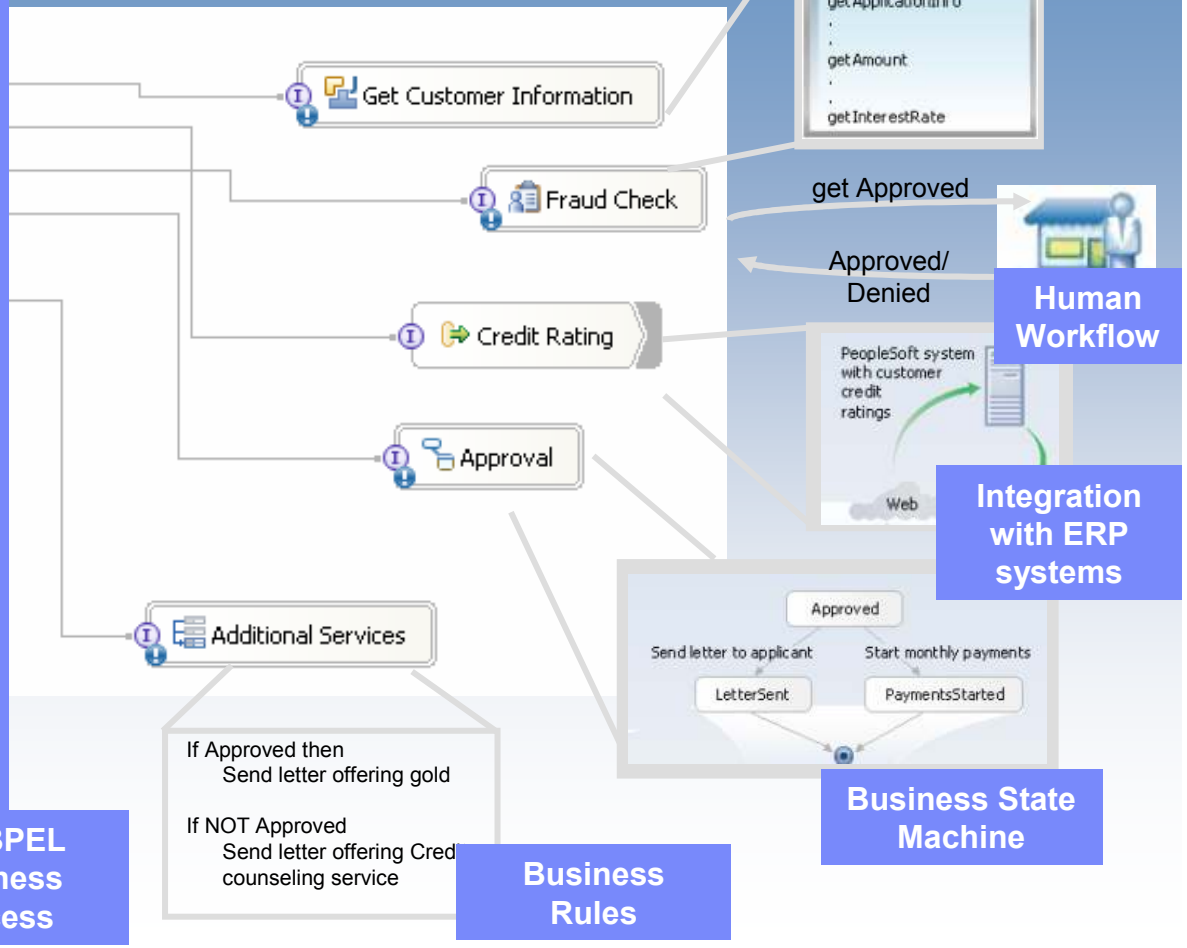
- Core Concepts …
  - Services are called Components
  - Each Component has an Interface
  - A caller of a Component has a Reference to that Component



Why it is Important to have a Single BPM Framework with SOA?

Assembling Components used in the Business Process

One Tool
One Server
One vendor



Java Application

Human Workflow

Integration with ERP systems

Business State Machine

Business Rules

WS-BPEL Business Process

Adapters ~ Service "On Ramp" for Existing Applications

Accelerated Time To Value

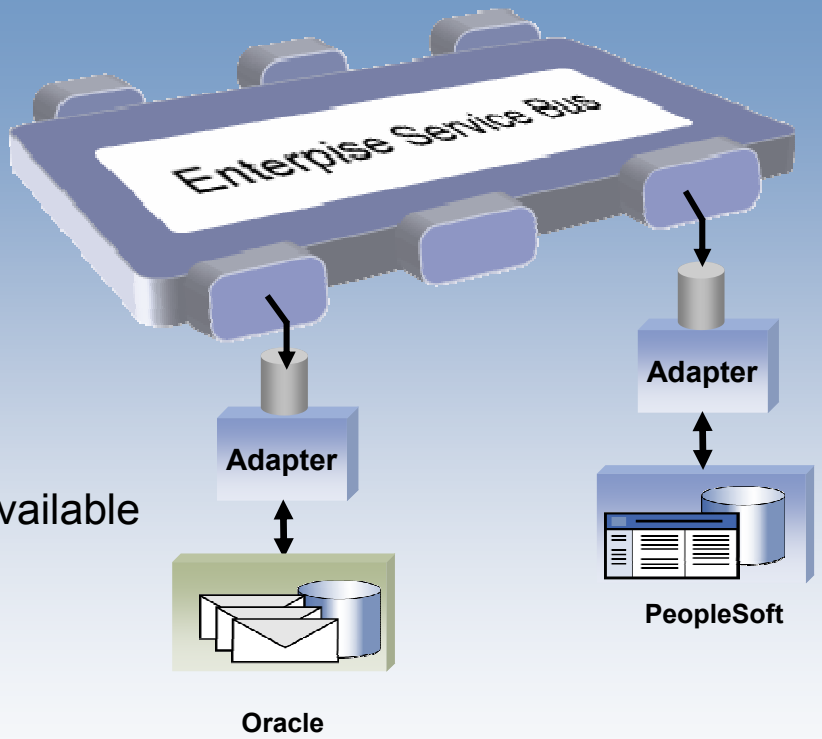
- Configure and deploy without coding
- Leverage existing metadata
- Connectivity through standardized technologies
- Leverage existing legacy capabilities

Enterprise Ready

- Mission-critical quality of service
- Full portfolio of integration products available through a single vendor

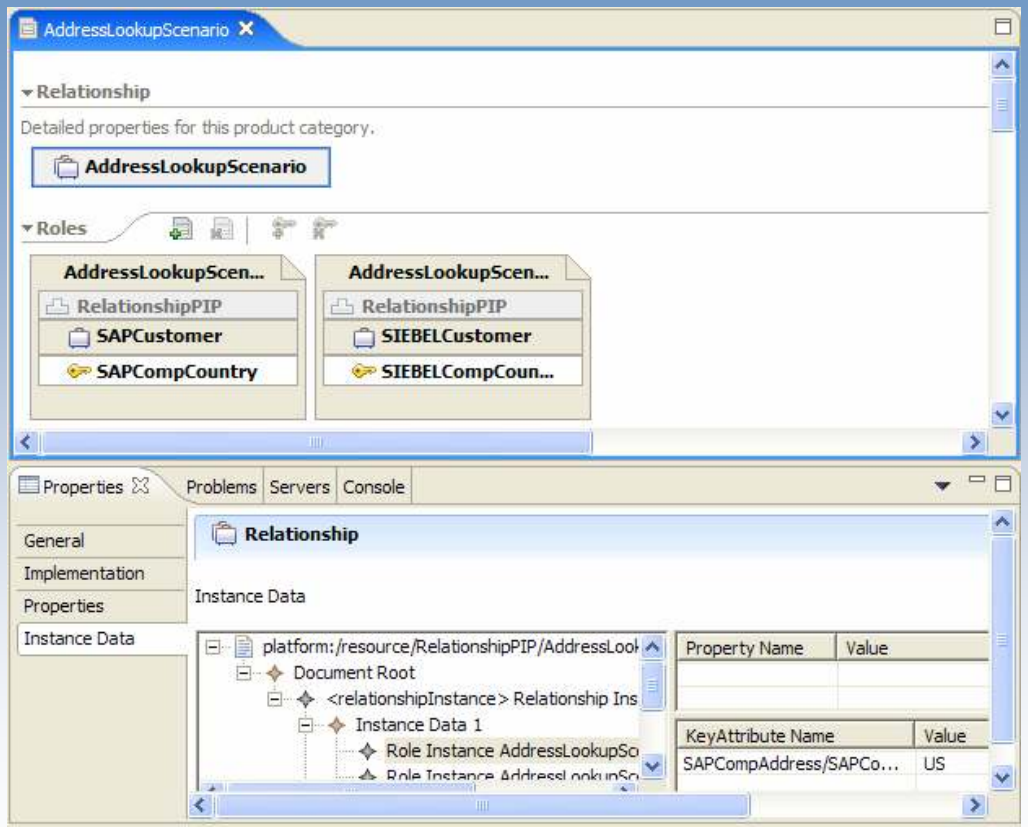
Best Practices

- First-class support for top ISVs
- Based on first-hand experience gained from integration services
- Established relationships with top-tier ISVs



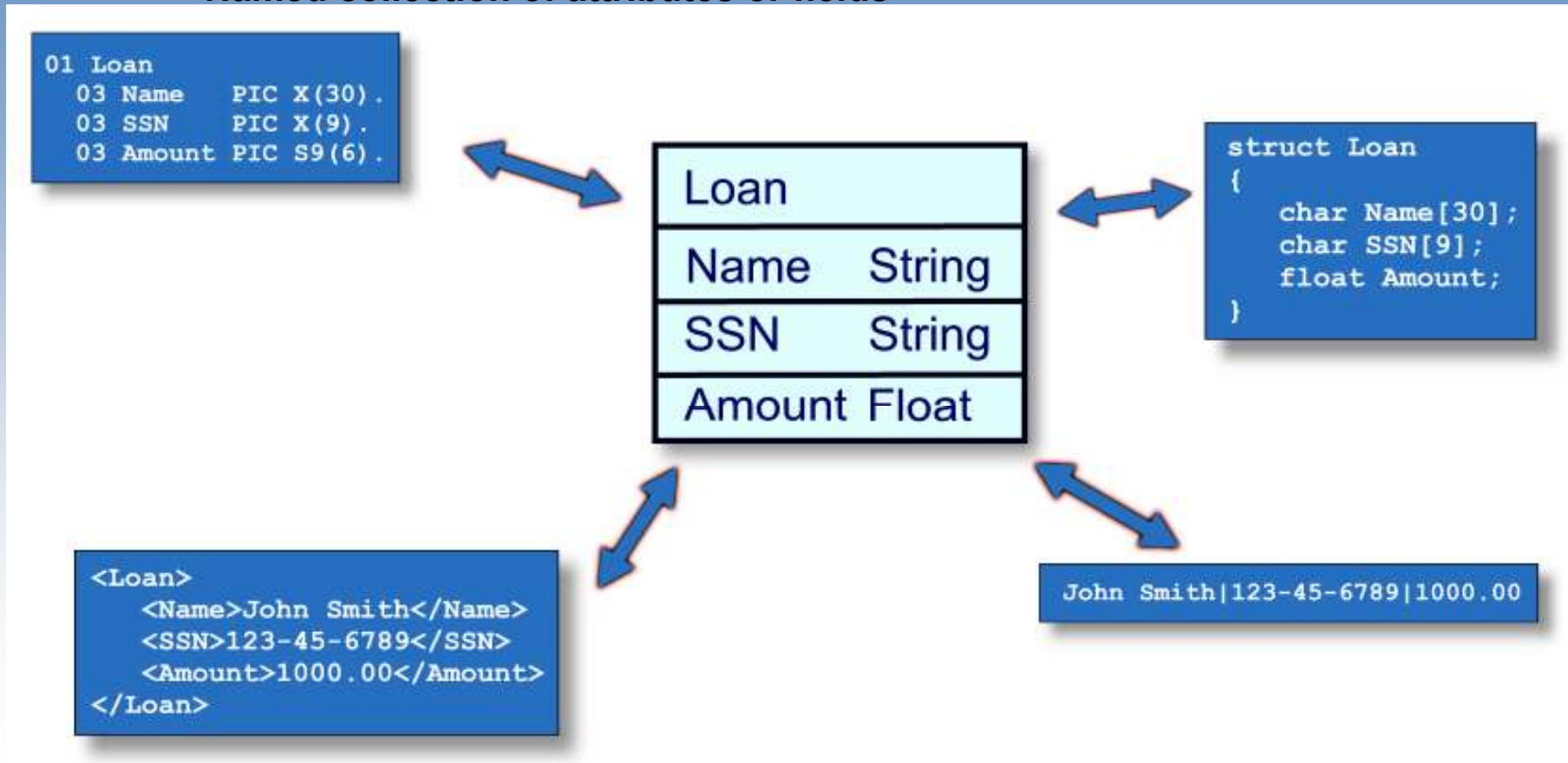
Supporting the CBOM through Relationship Management Services

- Leverages the generic layer to relate attributes between business objects
  - Cross-referencing
  - Static (lookup)
- One-to-One, One-to-Many, Many-to-Many
- Callable in multiple contexts
- Generates database schema & stored procedure code

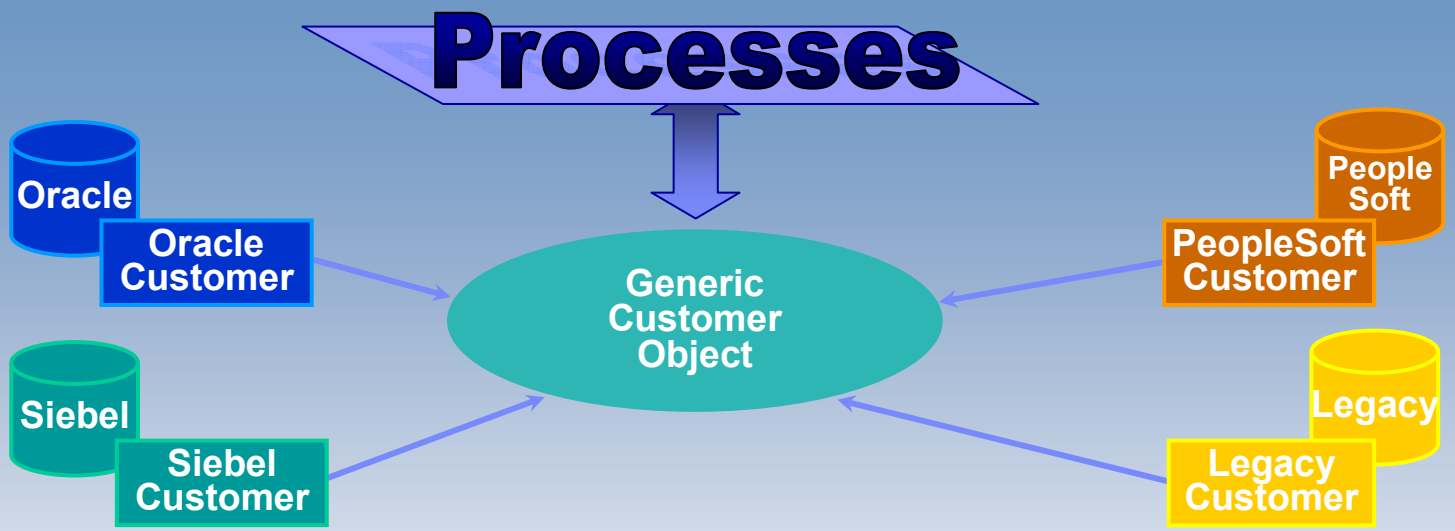


The Business Object …

- **Business Data !!**
- **Named collection of attributes or fields**

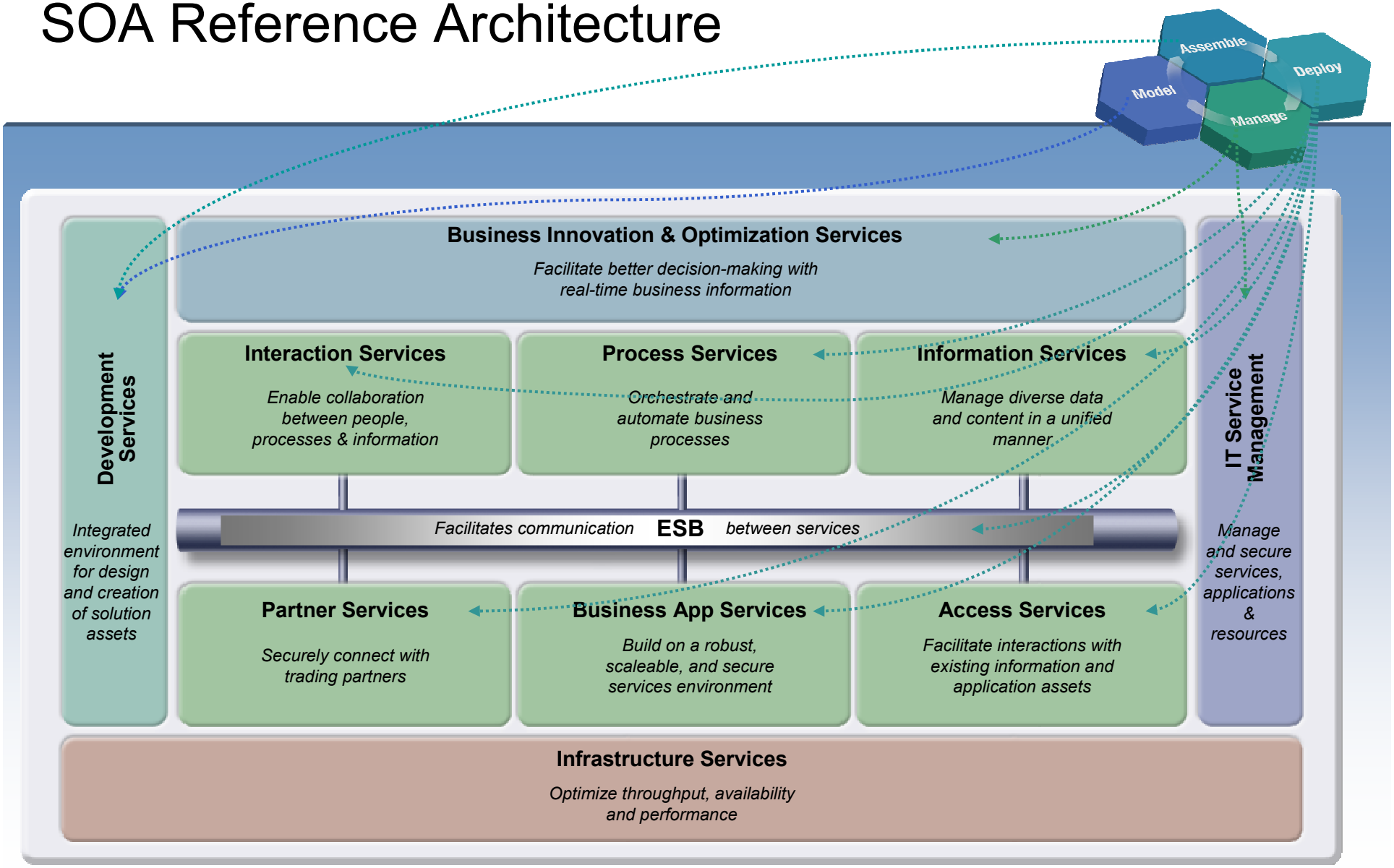


Lowered TCO and Improved Reuse through Application-Independent Business Logic



- Advance knowledge of all participating applications not required
  - Normalized view provides consistency in data representation
  - Adding applications means creating one transformation, not many
- Reduces effort, reduces project times, simplifies integration work

SOA Reference Architecture



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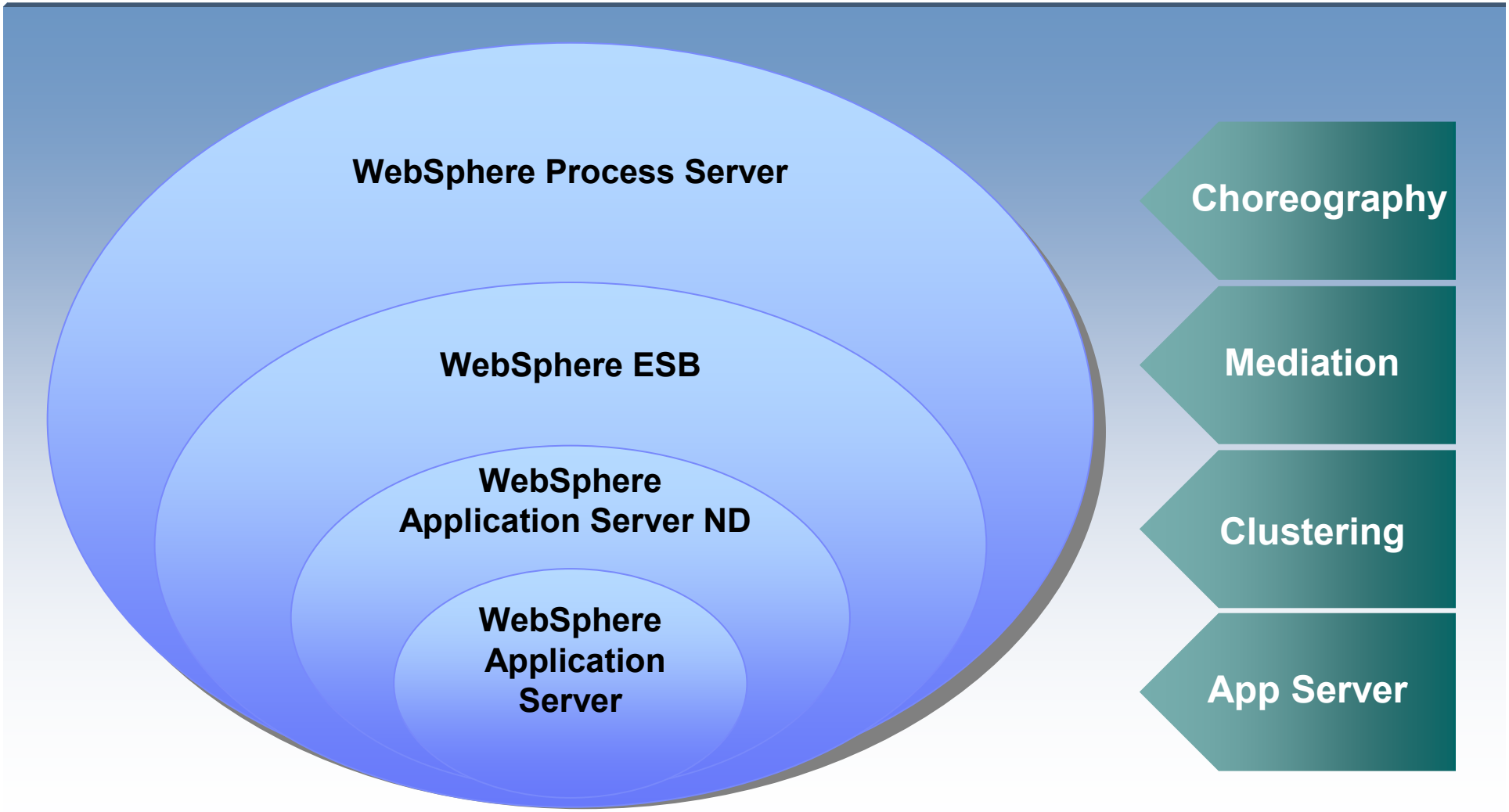
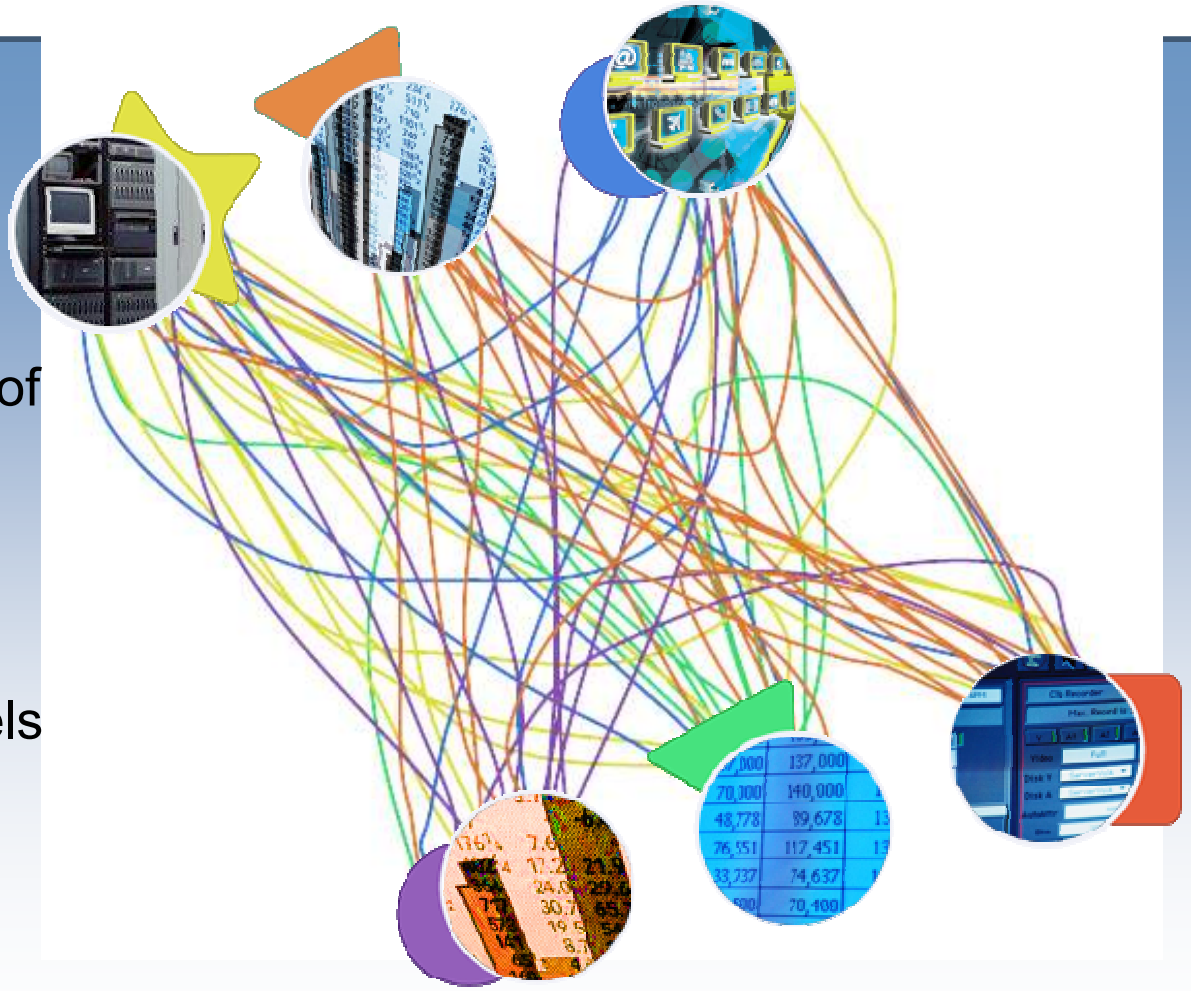
WebSphere ~ A Layered Architecture



How can development and maintenance be made less complex?

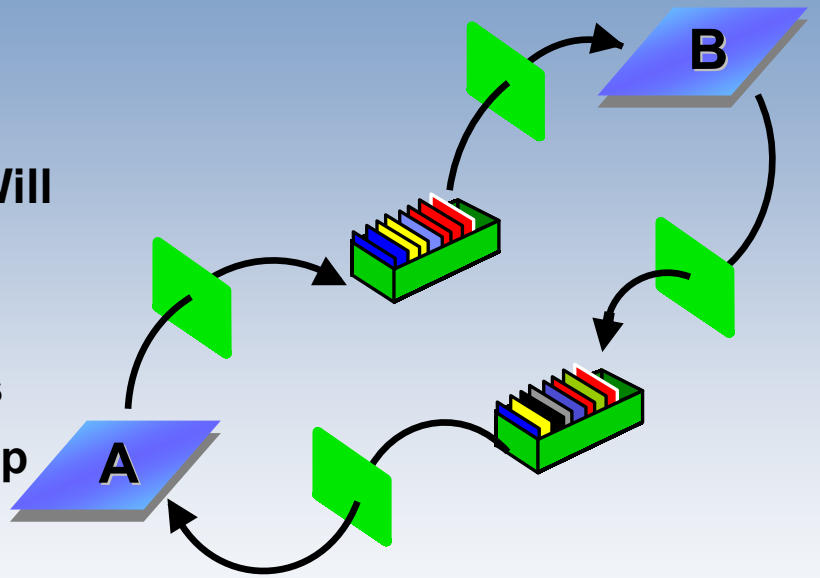
- ✓ Decouple interfaces from applications
- ✓ Enable all applications to communicate with each other regardless of
  - ✓ Programming languages
  - ✓ System platforms
  - ✓ Programming models
  - ✓ Protocols
  - ✓ Data formats.



The solution: the Enterprise Service Bus

Seven Advantages of WebSphere MQ over all other Competitors

1. **Proven Reliability**
2. **Unmatched Scalability and Clustering**
3. **Transactionality End-to-End**
4. **Best-of-Breed JMS Support**
5. **The Only Messaging Solution You Will Ever Need**
   - **35+ Platforms**
   - **Support for both JMS & MQI APIs**
   - **Seamless Integration between app servers and other applications**
6. **Unmatched Manageability and Partner Support**
7. **Market Leadership (chosen by 3 out of every 4 buyers)**

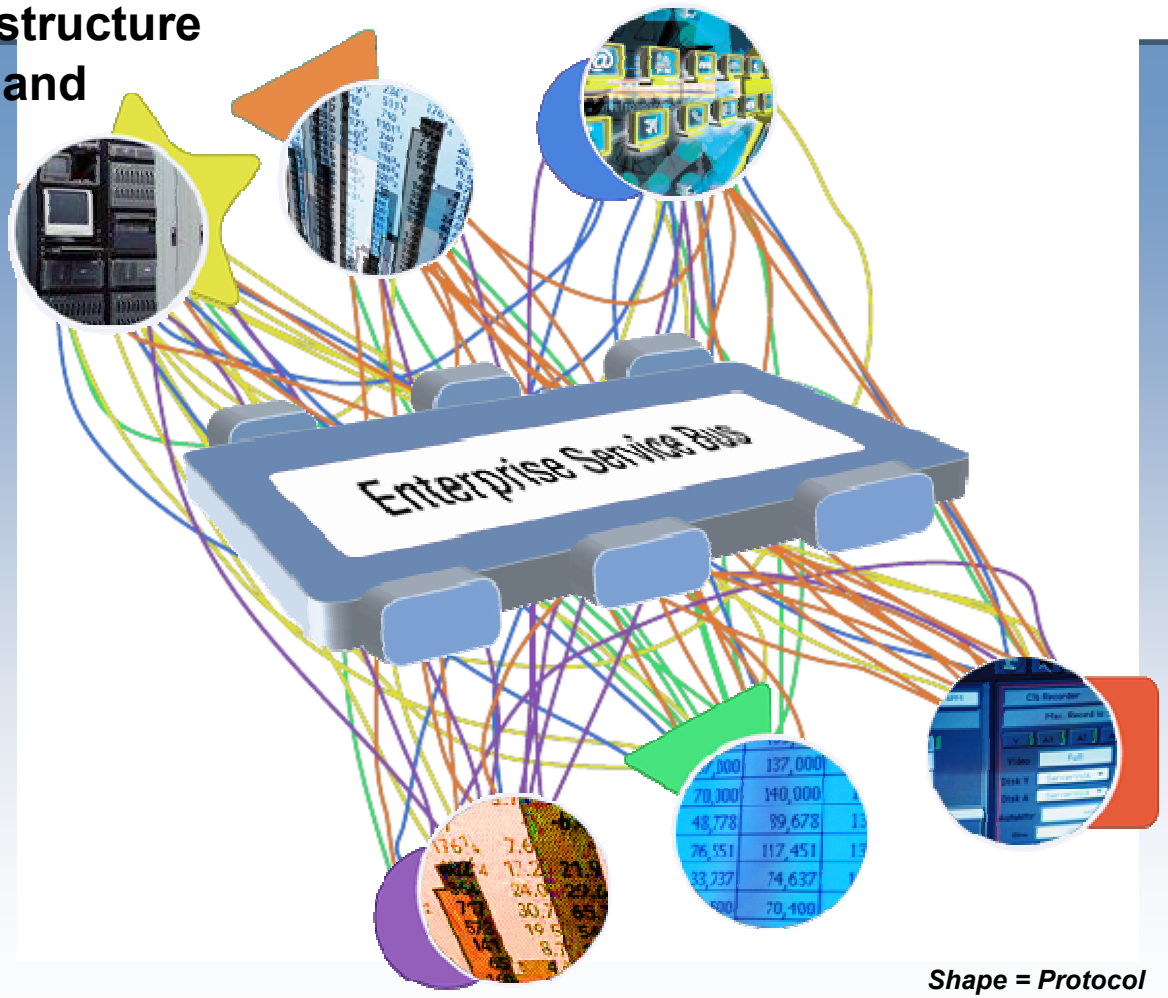


What is an Enterprise Service Bus (ESB)?

A flexible connectivity infrastructure for integrating applications and services…

……used to reduce the number, size, and complexity of interfaces.

An ESB:



Shape = Protocol

Color = Data type

What is an Enterprise Service Bus (ESB)?

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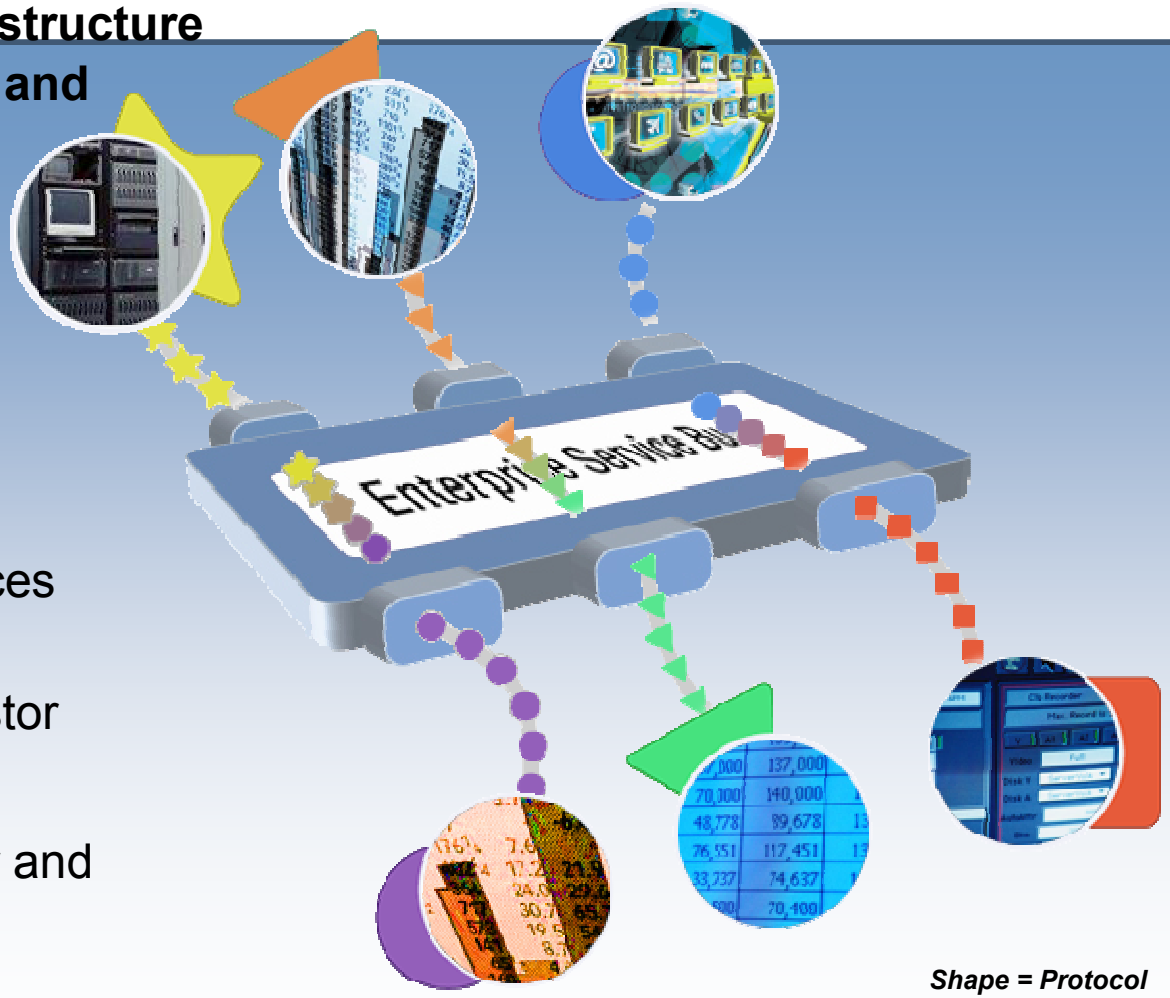
An ESB:

- **MATCHES & ROUTES** messages between services
- **CONVERTS** transport protocols between requestor and service
- **TRANSFORMS** message format between requestor and service
- **DISTRIBUTES** business events from/to disparate sources.



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WebSphere Message Broker 6.0

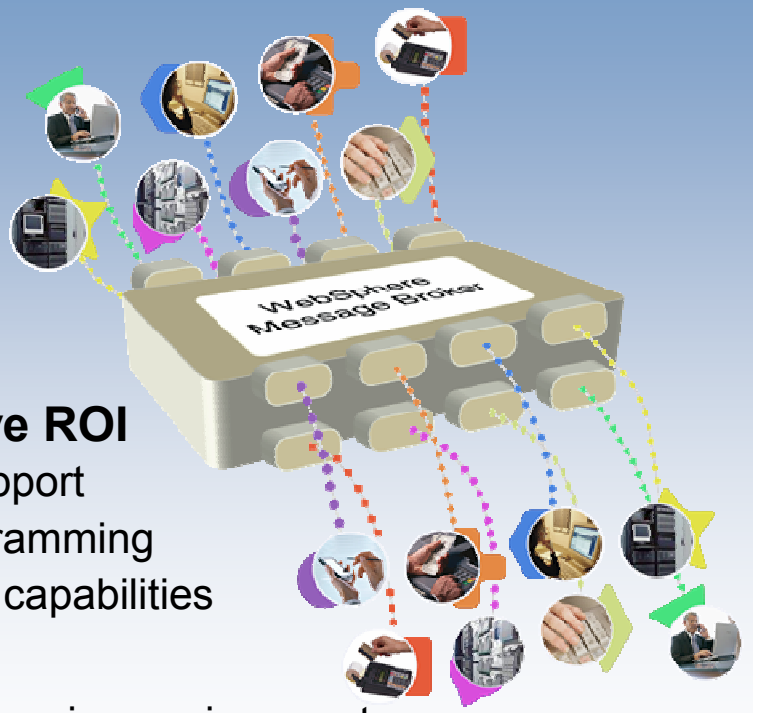
An advanced ESB to power your SOA

Provides universal connectivity

- Provides Web Services connectivity and non standard interface connectivity
- Unmatched ability in integrating many systems, platforms, devices, and APIs
- Facilitates service oriented integration

Provides universal data transformation

- Advanced message transformation, enrichment, and routing
- Support for industry standard data formats (AL3, HL7, SWIFT, HIPAA, EDI, etc.)



New & improved pre-built capabilities to improve ROI

- Leverage existing skills with rich Java and XML support
- Implement complex event processing with no programming
- Offers simple and easy to use tools with advanced capabilities

Leverage the performance

- Offers performance of traditional transactional processing environments

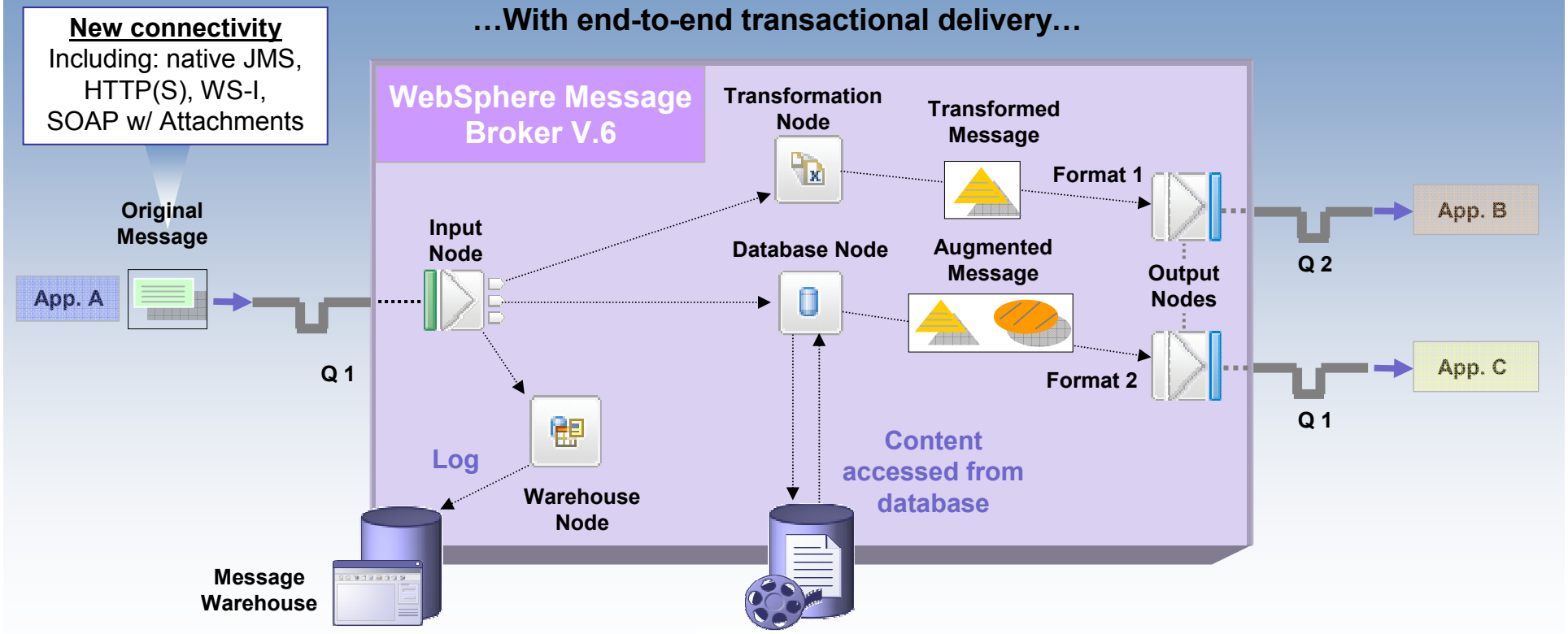
Integrate your existing environment with the world of web services

IBM WebSphere Message Broker – ESB Mediation Services

Delivers the right information, at the right time, based on the specific need of each recipient…

- ✓ Examines content and **routes** it accordingly
- ✓ **Transforms** content
- ✓ **Augments** content
- ✓ **Logs** content
- ✓ **Matches** and **compares** content
- ✓ Provides **Complex Event Processing**

…With end-to-end transactional delivery…

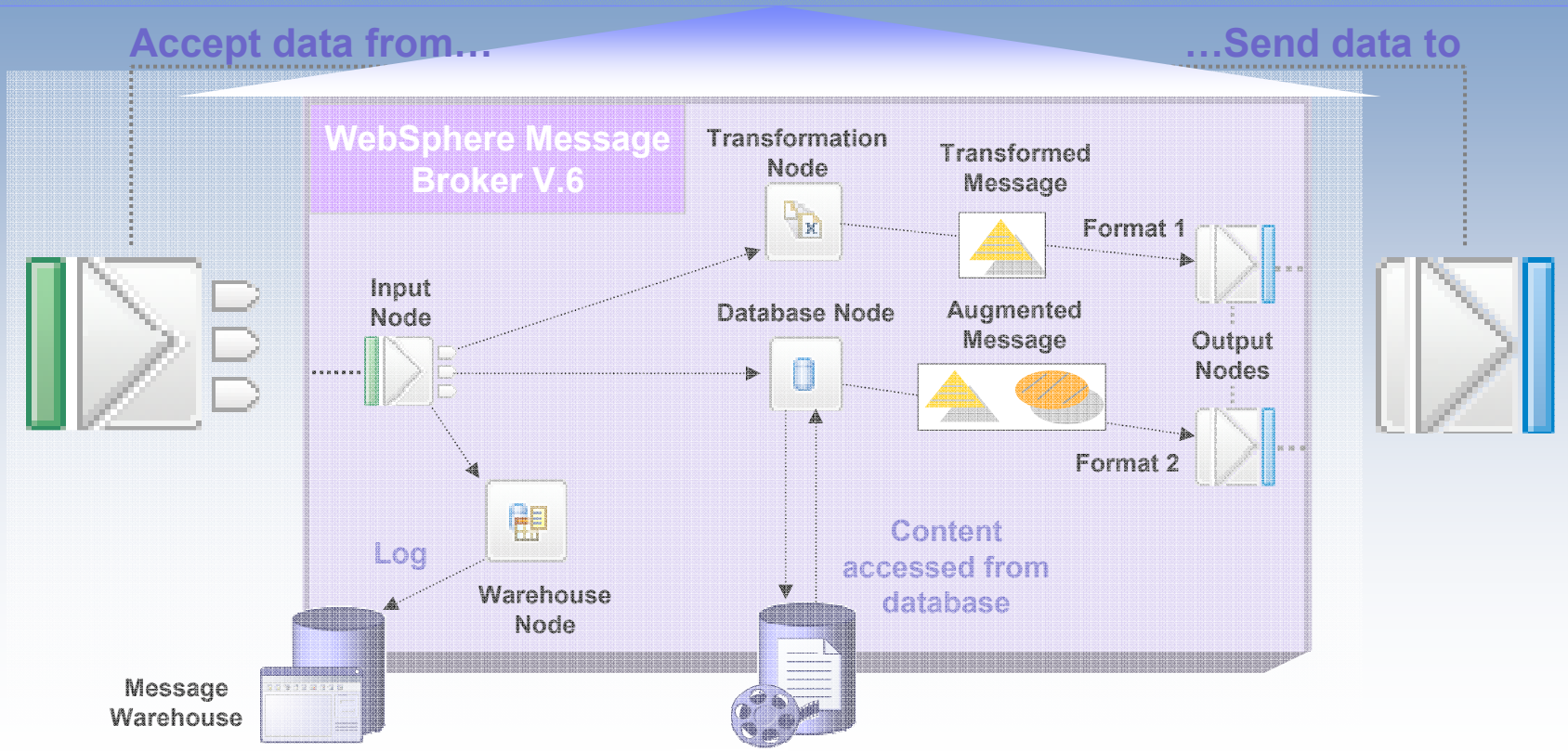


…and graphical tooling built on the Eclipse framework…

Providing Universal Connectivity

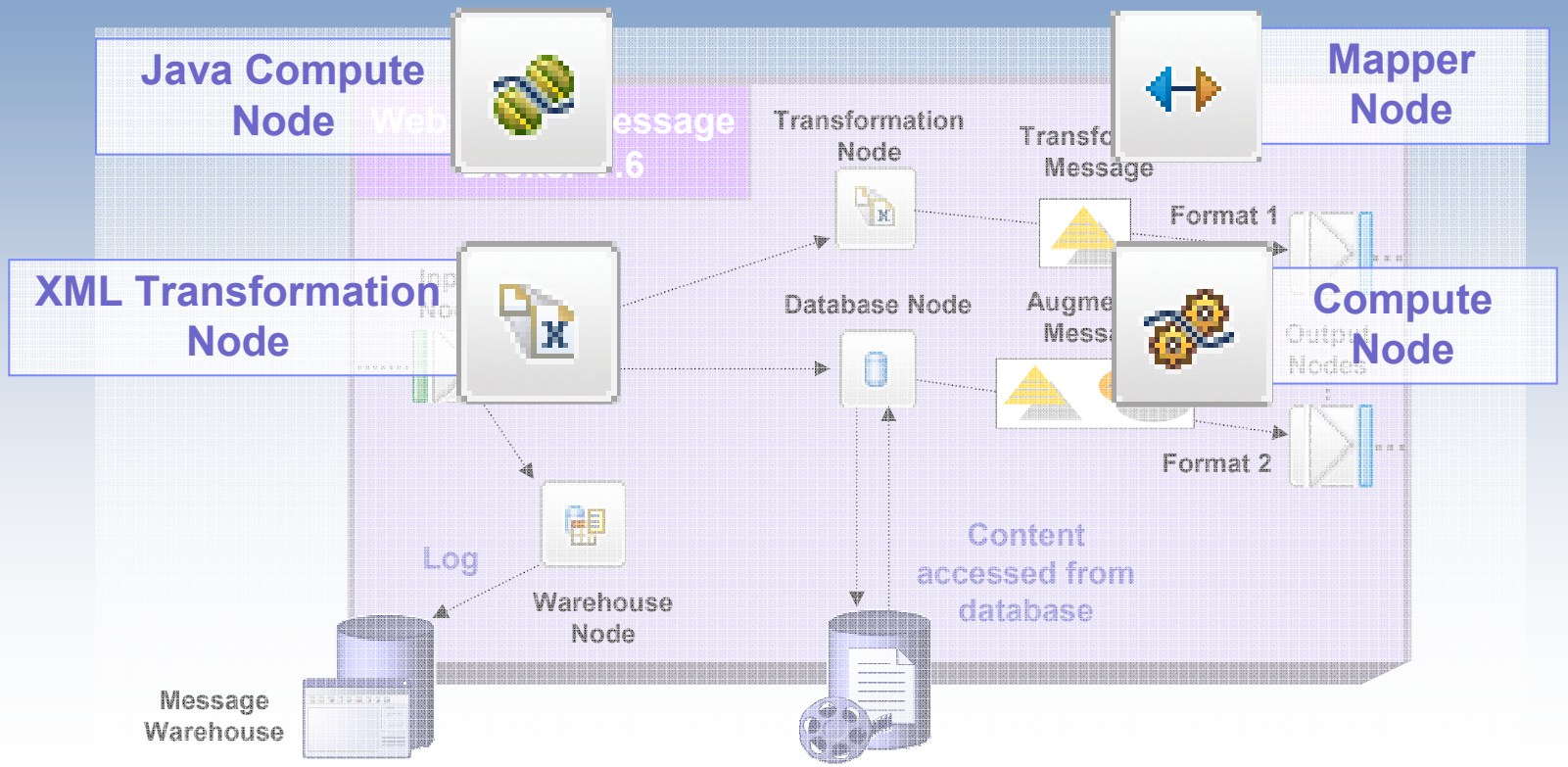
- MQ
- CICS
- VSAM
- QSAM(z/OS)
- Flat files (Windows, UNIX)
- HTTP(S)
- WebSphere MQ Real-time
- Messages from any JMS 1.1 provider
- SOAP / with attachments
- Custom format
- MQTT
- TCP
- Tibco RV

and more…



Offering a Range of Transformation Options

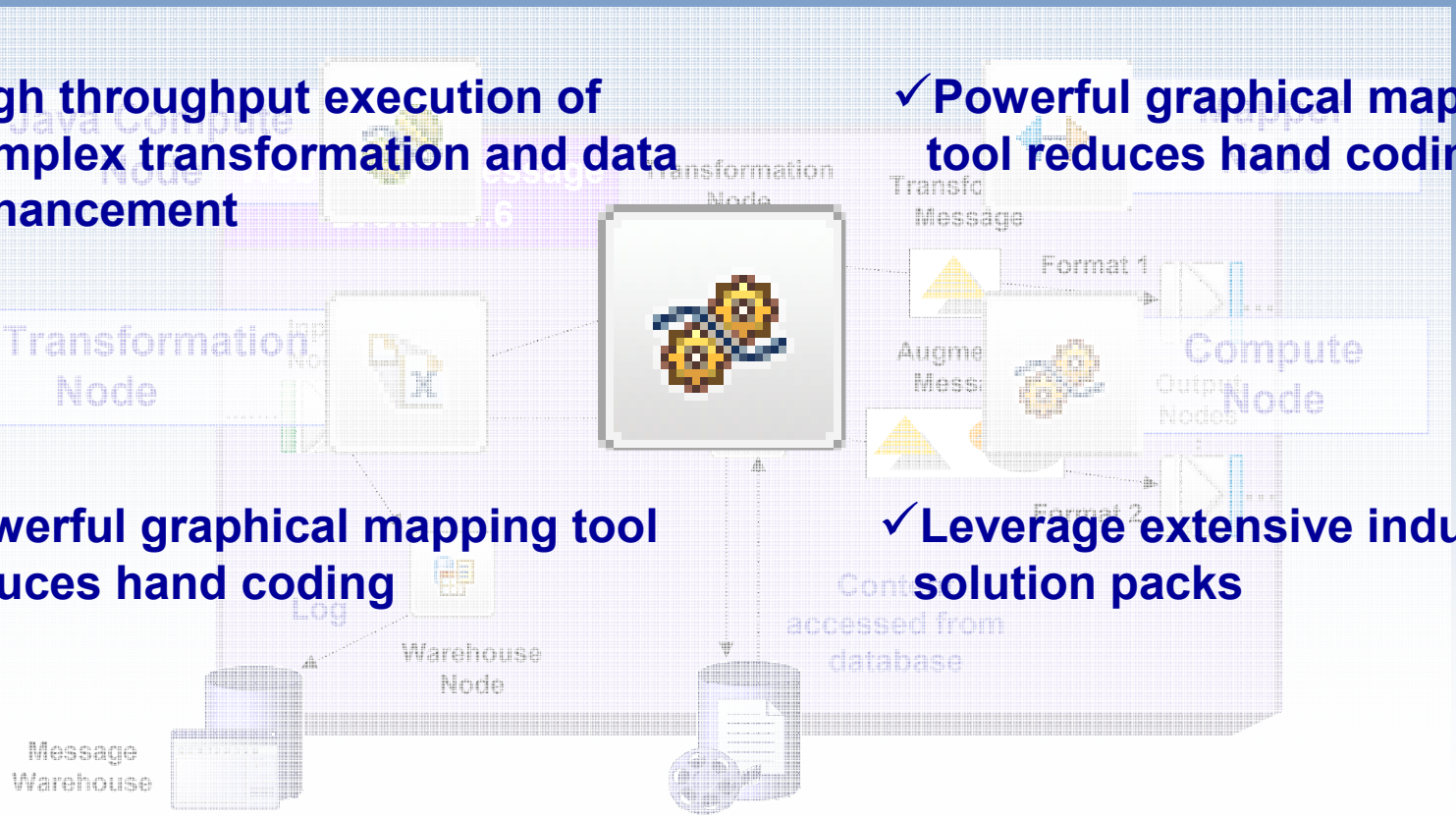
Based on their requirements and skills, users can select from a range of transformation options.



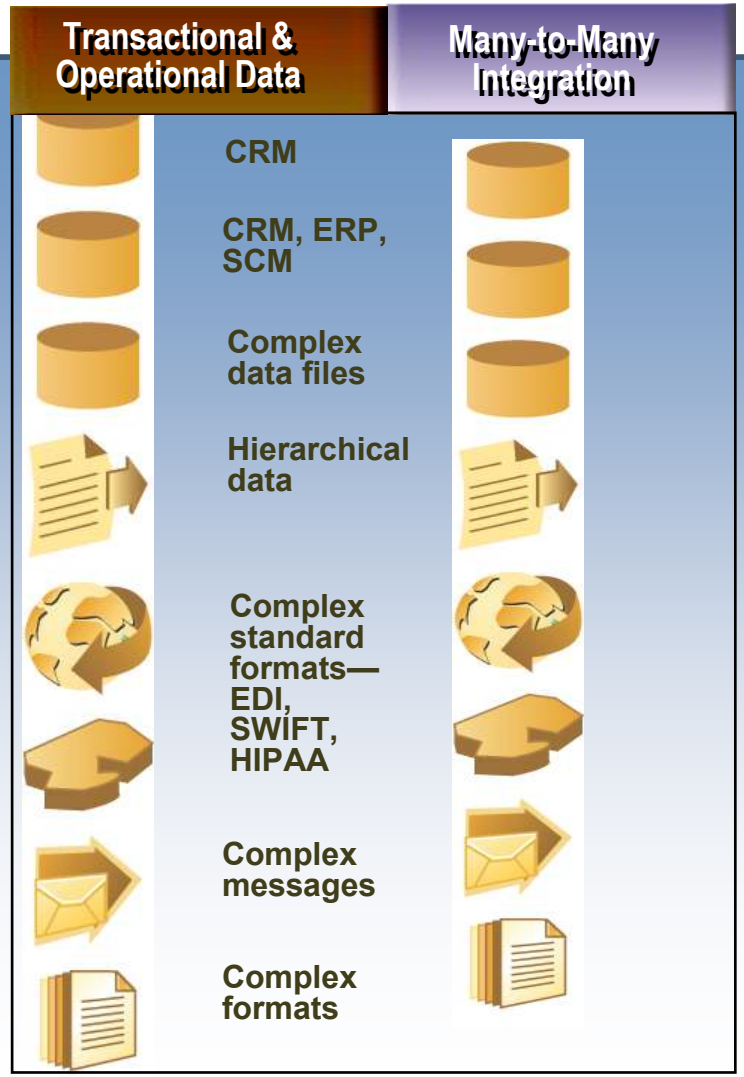
Now you can extend your advanced ESB with…

WebSphere TX Extender for Message Broker

- ✓High throughput execution of complex transformation and data enhancement
- ✓Powerful graphical mapping tool reduces hand coding
- ✓Powerful graphical mapping tool reduces hand coding
- ✓Leverage extensive industry solution packs



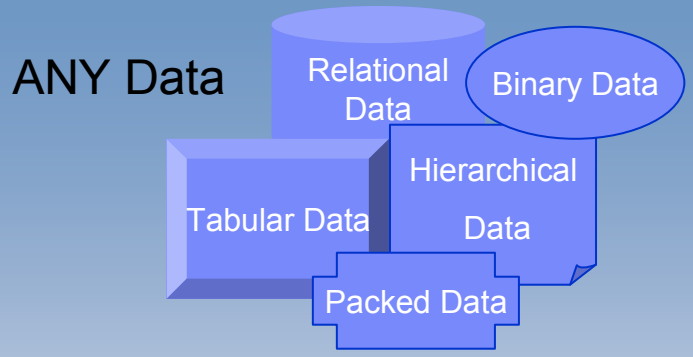
About WebSphere TX

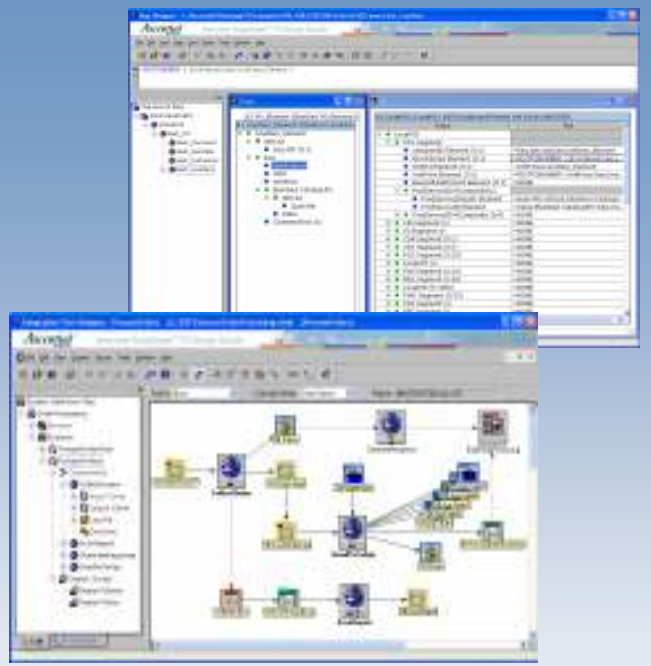


- Validates complex, hierarchical data without requiring coding
- Transforms complex, hierarchical data without requiring coding
  - Integrates multiple data sources with interdependencies
  - Transforms from multiple different sources to multiple different targets in a single step
  - Efficiently integrates large, complex messages or data records
  - Supports complex data formats like SWIFT (financial services), HIPAA (healthcare), and EDI (cross-industry)
- WebSphere TX Packs for “” provide add-on capability like HIPAA, SWIFT, X12, EDIFACT

What does WebSphere TX do?

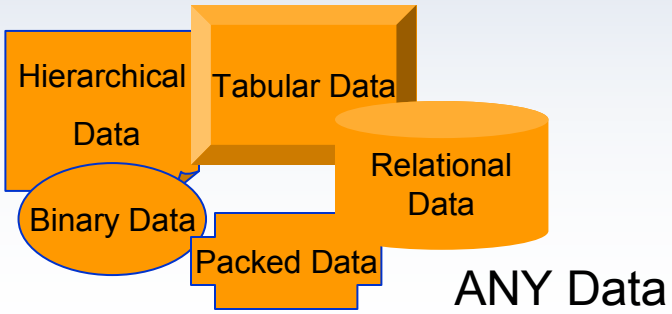
It takes any kind of data from its native form



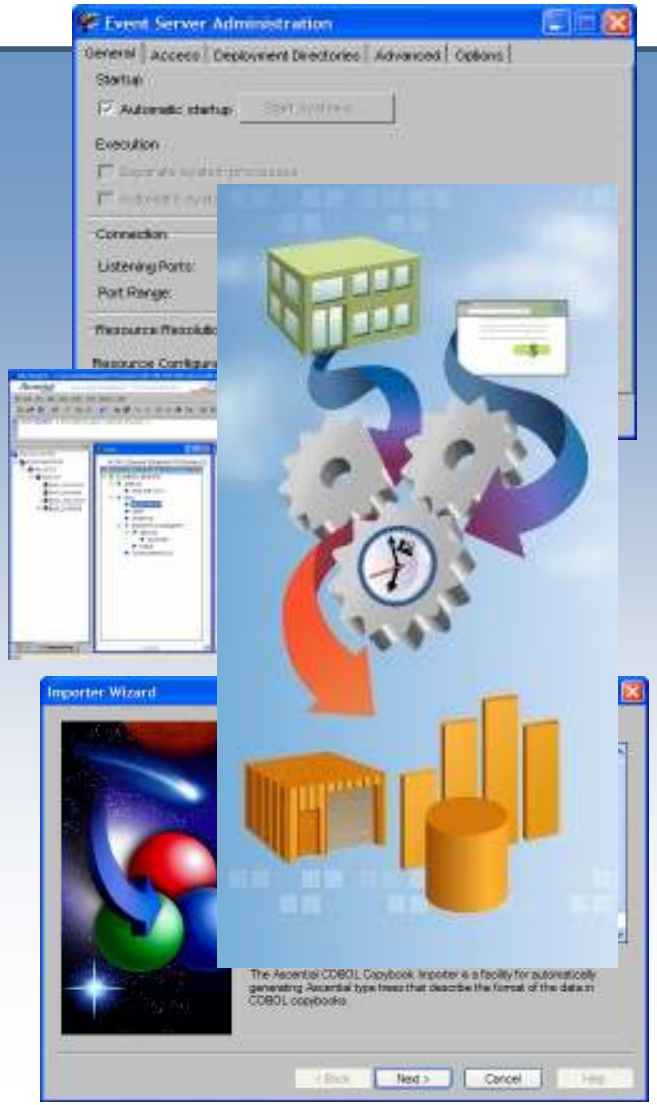


Processes them together, natively, with no Code

And outputs them into their native target formats

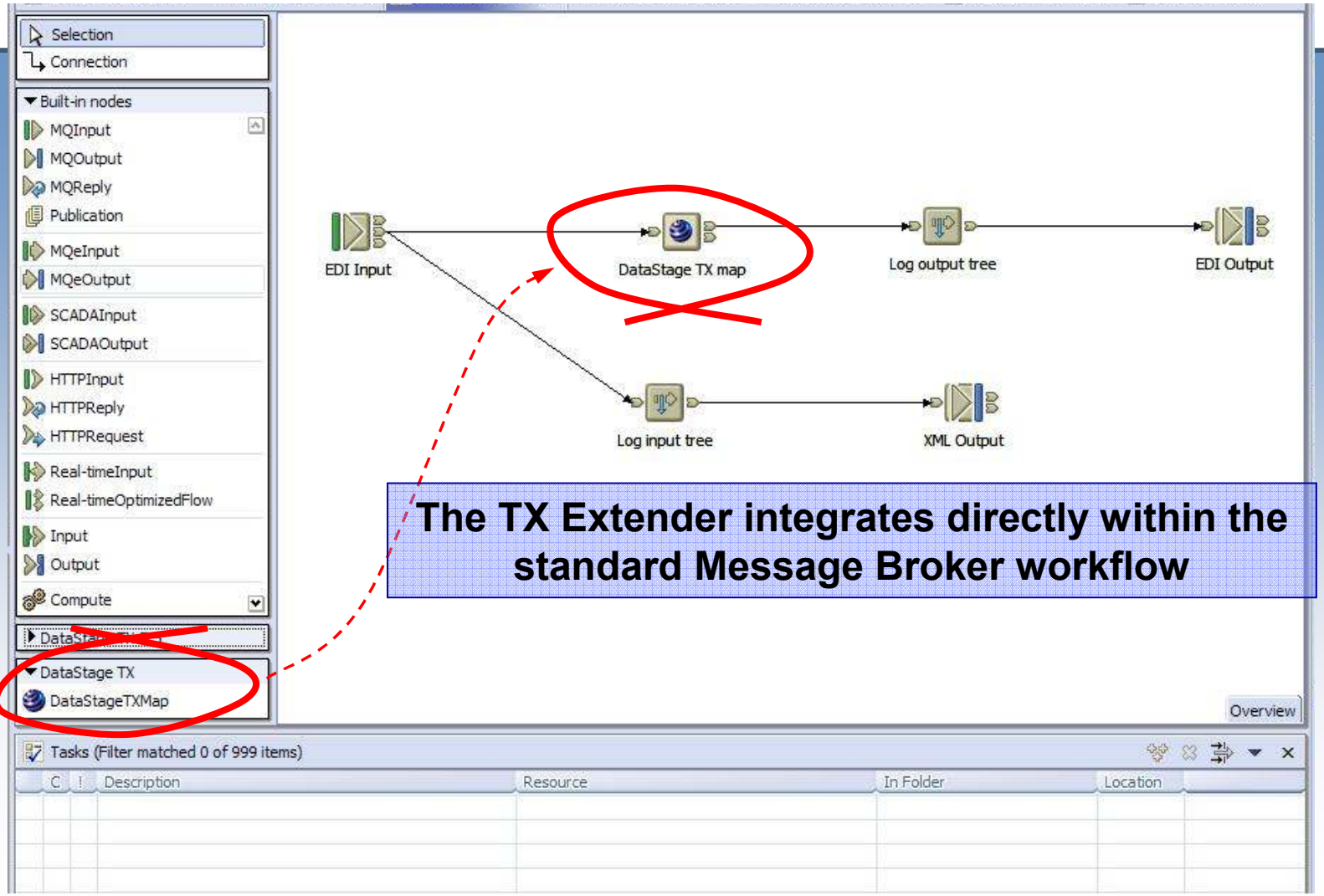


The WebSphere TX Solution

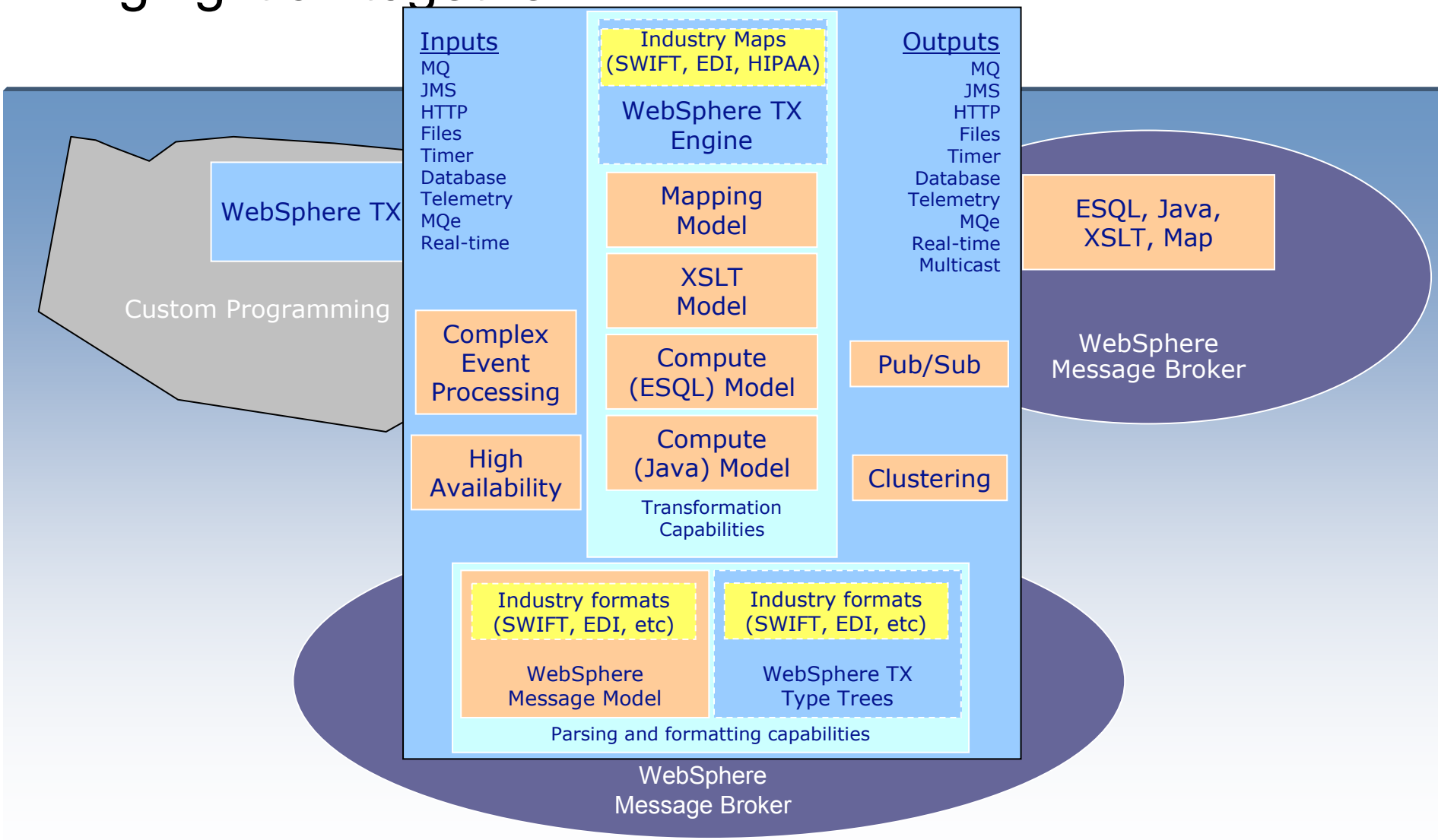


Successful Transactional Data Integration Requires:	WebSphere TX Provides:
• Quick-response, high-performance data integration	• Event-driven, real-time data synchronization
• Transformation of complex data from multiple sources to multiple targets	• Automated transformation of complex, hierarchical nested data across many interfaces
• Automatic routing of data based on complex business rules	• Routing based on content anywhere in multiple data sources
• Interoperability across operational data systems	• Codeless synchronization of legacy, custom and off-the-shelf applications
• Real-time screening of key transactions	• Data content validation against business rules
• New integration power without replacement of existing IT infrastructures	• Loosely coupled components for rapid embedding (SOA) and seamless interoperability
• Compliance with industry standards and regulatory mandates	• Out-of-the-box solutions for industry standards and regulatory compliance

DataStage TX transformation in a message flow



Bringing it all together



IBM WebSphere Message Broker + WebSphere TX

Summary …

- BPEL is a standard for Process Choreography
  - BPEL provides support for required patterns:
    - ✓ Error Handling
    - ✓ Compensation
    - ✓ Asynchronous Process
    - ✓ … Much more
- WebSphere Business Modeler bridges IT and Business
- WID Provides a Process Editor
  no Java Skills Required
- WPS Executes BPEL Processes
- ESB enables composite applications to integrate with Legacy Systems

WebSphere Message Broker and WebSphere TX : the Message

WebSphere Message Broker

"The universal data-in-motion coordination platform"

WebSphere TX

"The universal data transformation engine"

WebSphere Message Broker +
WDSTX Extender for WebSphere Message Broker

"The most powerful Any-to-Any Broker on the Market"

Why IBM WebSphere software for SOA?

Nobody has the same breadth and depth

- Broad portfolio relied on by over 87,000 customers
- #1 across application integration middleware
- Extensive ecosystem – more than 4,000 partners and 3,150 active ISV solutions

Nobody invests more

- IBM investing over $1B a year around SOA and Web services
- Over 6,700 IBM developers
- Over 10,750 IGS technical practitioners trained on WebSphere

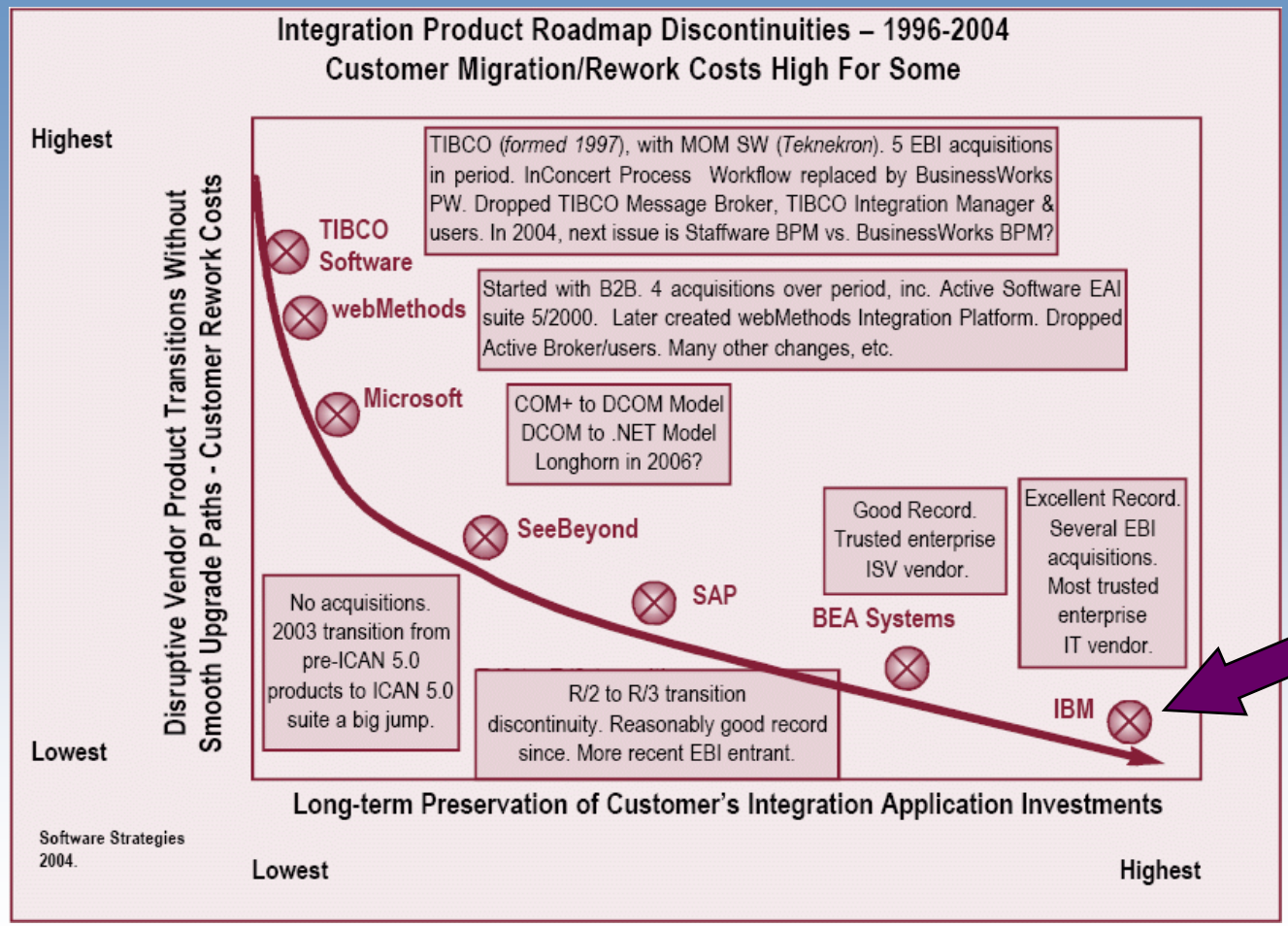
Award winning SOA products

IBM tops elite vendor list *-Intelligent Enterprise Editors' Choice Awards (April 2005)*

IBM Overall Winner in Application Integration Middleware
-CRN Channel Champions Award (March 2005)

WebSphere: "impressive management options, support for Web services and general ease of use…" *– Network Computing (February 2005)*

IBM has the best track record in preserving existing Customers' investments



Thank You.